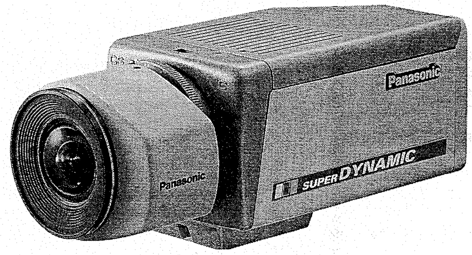
ORDER NO. AVS9711081A8

Service Manual

CCTV Cameras

WV-BP550/WV-BP554

Simplified



(Lens: Option)

Please file and use this manual together with the service manual for the Model No. WV-CP450/WV-CP650 Series, order No. AVS9710062C8.

SPECIFICATIONS

Pick-up Device:	752 (H) x 582 (V) pixels, Interline Transfer CCD
Scanning Area:	4.9 (H) x 3.7 (V) mm (Equivalent to scanning area of 1/3" pick-up tube)
Scanning:	625 lines / 50 fields / 25 frames
Horizontal:	15.625 KHz
Vertical:	50.00 Hz
Synchronization:	Internal, Line-locked, External (VS) or Multiplexed Vertical Drive (VD2) Selectable
Video Output:	1.0 V[p-p] CCIR composite 75 Ω / BNC connector
Horizontal Resolution:	570 lines
Signal-to-Noise Ratio:	50 dB (AGC OFF, weight ON)
Dynamic Range:	42 dB
Minimum Illumination:	0.02 lx (0.002 footcandle) at F0.75 [Equivalent to 0.08 lx (0.008 footcandle) at F1.4]
Gain Control:	Selectable AGC ON or OFF (SET UP MENU)
Aperture:	Set Variable (SET UP MENU)
Electronic Light Control:	Equivalent to continuous variable shutter speed between 1/50 second and 1/10 000 second
Super-D:	Selectable On or Off (SET UP MENU)
Electronic Shutter Speed:	Selectable 1/50 (OFF), 1/120, 1/250, 1/500, 1/1 000, 1/2 000, 1/4 000, 1/10 000 second
Lens Mount:	Selectable C-mount or CS-mount
ALC Lens:	Selectable DC or Video
Ambient Operating Temperature:	-10°C - +50°C (14°F - 122°F)
Ambient Operating Humidity:	Less than 90%
Power Source and Power Consumption:	WV-BP550: 220 - 240V AC 50 Hz, 5.5W WV-BP554: 24V AC 50 Hz, 5.4W 12V DC, 570 mA
Dimensions (without lens):	67 (W) x 55 (H) x 123 (D) mm [2-5/8" (W) x 2-3/16" (H) x 4-13/16" (D)]
Weights (without lens):	WV-BP550: 0.41kg (0.9 lbs.) (without power cord) WV-BP554: 0.41kg (0.9 lbs.)

Weights and dimensions indicated are approximate.
Specifications are subject to change without notice.

Panasonic

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⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public.
It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN

CAUTION:
TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER SERVICEABLE PARTS INSIDE.
REFER SERVICEING TO QUALIFIED SERVICE PERSONNEL.

⚠ This symbol warns the user that uninsuland voltage within the unit may have sufficient magnitude to cause electric shock. Therefore, it is dangerous to make any kind of contact with any inside part of this unit.

⚠ This symbol alerts the user that impotant literature concerning the operation and maintenance of this has been included. Therefore, it should be read carefully in order to avoid any problems.

IMPORTANT SAFETY NOTICE

There are special components used in this equipment which are important for safety. These parts are indicated by the "⚠" mark on the schematic diagram and the replacement parts list. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent shock, fire, or other hazards.
Do not modify the original design without permission of manufacture.

STANDARD ACCESSORIES

Body Cap ....1 pc.
ALC Lens Connector ....1 pc.
AC Power Cord (for only WV-BP550) ....1 pc.

OPTIONAL ACCESSORIES

Lenses : WV-LA2R8C3B, WV-LA4R5C3B, WV-LA9C3B, WV-LA210C3, WV-LA408C3, WV-LA908C3
WV-LZ61/10, WV-LZ62/2, WV-LF4R5C3A, WV-LF9C3A

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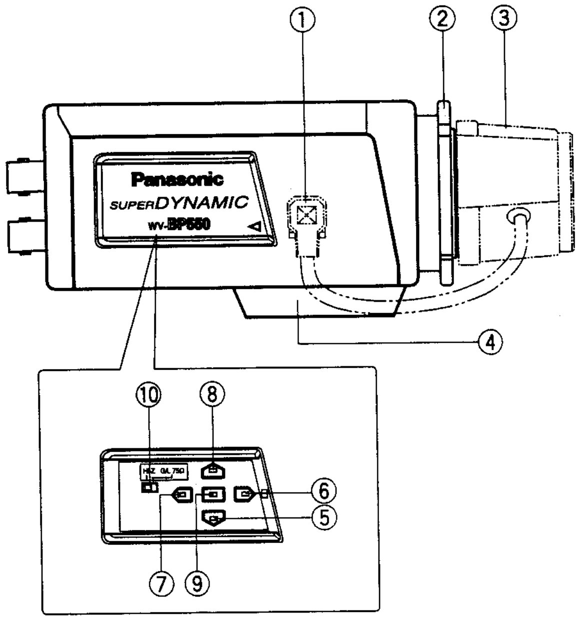
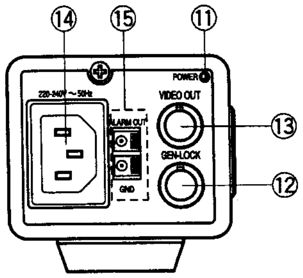
MAJOR OPERATING CONTROLS AND THEIR FUNCTIONS

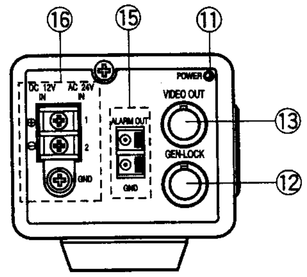


Slide the panel to the left until it locks.

<WV-BP550>



<WV-BP554>



① **Auto Iris Lens Connector**
This connector is used to connect with the auto iris lens by a 4-pin male connector that is supplied as a standard accessory.

② **Back Focal Adjusting Ring**
This ring is used to adjust the back focal length or picture focus. Rotate this ring clockwise for a C-mount lens or counter-clockwise for a CS-mount lens.

③ **Lens (Option)**

④ **Camera Mounting Screw Hole**
This hole is used to mount the camera onto a mounting bracket.

⑤ **Down Button (⯆)**
This button is used to move the cursor downward. It is also used to select items in the CAM SET UP menu.

⑥ **Right Button (⯈)**
This button is used to move the cursor to the right. It also selects the mode and can be used to adjust some levels.

⑦ **Left Button (⯇)**
This button is used to move the cursor to the left. It also selects the mode and can be used to adjust some levels.

⑧ **Up Button (⯅)**
This button is used to move the cursor upward. It is also used to select items in the CAM SET UP menu.

⑨ **Set Button (▭)**
This button is used to activate an item selected in the CAM SET UP menu.

⑩ **Gen-lock Termination Switch (Hi-Z, G/L 75Ω)**
Set this switch to Hi-Z when a gen-lock video input signal is looped through. In all other cases, set this switch to 75Ω.

⑪ **Power indicator**
This indicator lights up when the power of this camera is on.

⑫ **Gen-lock Input Connector (GEN-LOCK)**
This connector is used to connect an external system for synchronization.

⑬ **Video Output Connector (VIDEO OUT)**
This connector is used to connect with the VIDEO IN connector of the monitor.

⑭ **Power Cord Socket**
This socket is used to connect the power cord (supplied as a standard accessory).

⑮ **Alarm Output Terminal (ALARM OUT/GND)**
This terminal is used to connect to the ALARM INPUT connector (terminal) of an external equipment. When this camera detects motion, the alarm output signal is supplied to the connected external equipment.

⑯ **AC/DC Compatible Input Terminal (DC 12V IN/AC 24V IN)**
This terminal is for connecting the 12 V DC or 24 V AC power supply cord.

Caution:
Connect to 12V DC (10.5V-16V) or 24V AC (19.5V-28V) class 2 power supply only. Make sure to connect the grounding lead to the GND terminal when the power is supplied from a 24V AC power source.

ABOUT YOUR COMPUTER

In order to run the E.V.R. (Electric Variable Resistor) adjustment program your IBM-PC/AT Type or compatible must meet the following requirements:

- The DOS Operating System must be 3.3 or higher.
- The Operating System must be 100% compatible with your computer.
- The memory in your IBM-PC must be at least 640k-bytes, and 512k-bytes shall be available to the E.V.R. adjustment program.

Installing E.V.R. Adjustment Program

- The Example given here is for A 2 drive computer, your procedure might vary slightly depending on drive configuration.
- Formatting new disk and making a copy of DOS Operating System.

  a) Insert disk containing DOS operating system into your floppy drive (for example, drive A) and type **A:**
  b) Insert new disk into your floppy drive (for example, drive B).
  c) Format and make a copy of DOS operating system from your original disk to new disk by typing **FORMAT B:/S** and press the **ENTER** key.
  d) Type **COPY ANSI. SYS B:** and press the **ENTER** key.

- Install E.V.R. Adjustment Program onto formatted new disk with DOS operating system.
  FOR WV-BP550
  e) Take out original disk containing DOS operating system from your floppy drive (drive A) and insert disk containing E.V.R. adjustment program into your floppy drive (drive A) and type **A:**
  f) At the prompt, type **CD IBMPC** and press the **ENTER** key .
  g) If required, type **COPY CONFIG.SYS B:** and press the **ENTER** key.
  h) Type **CD PAL** for PAL.
  i) Type **COPY ADJ3E. EXE B:** and press the **ENTER** key.
  j) Type **CD** and press the **ENTER** key.
  k) Type **CD SEQ** and press the **ENTER** key.
  l) Type **COPY BP550E. SEQ B:** and press the **ENTER** Key.
  m) Type **CD** and press the **ENTER** key.
  n) Type **CD EVR** and press the **ENTER** key.
  o) Type **COPY BP550E. EVR B:** and press the **ENTER** key.
  p) After completing installation of program, you are ready to use the E.V.R. adjustment program.

Note:
When completed the new disk should be a bootable disk which contains the following files:

1.	COMMAND	COM
2.	ANSI	SYS
3.	CONFIG	SYS
4.	ADJ3E	EXE
5.	BP550E	SEQ
6.	BP550E	EVR

ADJUSTMENT PROCEDURE

1. Test Equipment Required

The following test Equipment are required for adjustment of the CCTV Camera WV-BP550 and WV-BP554.

- Oscilloscope
- Frequency Counter
- Digital Voltmeter
- Vectorscope
- Waveform Monitor
- Underscanned Black and White Video Monitor
- Video Signal Generator
- 12 V DC Power Supply Unit
- Lux Meter
- Lighting (275 footcandles (2,750 ± 150 lux), Colour Temperature 5,100 ± 100 K)
- Personal Computer (IBM PC/AT type or equivalent)
- Standard Straight RS-232C Cable
- ALC Lens (WV-LA9C3A, WV-LA12 or equivalent)
- Manual Iris Lens
- Colour Temperature Conversion Filters (KENKO : W12, C4, C12 or equivalent)
- ND16 Filter (ND8 x 2pcs)
- White Chart or White Paper
- Radiation Chart
- Logarithmic Gray Scale Chart as shown Fig. 1-1. (Part Number:YWV2310RB99)

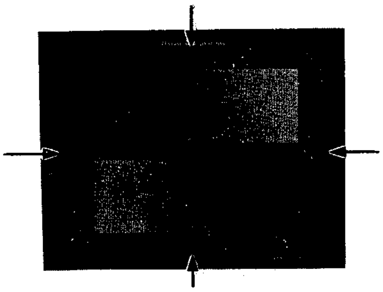


Fig. 1-1

- Extension Cable as shown in Fig. 1-2. (Part Number: YWV0EA1171AN)

Fig. 1-2

- Electric Variable Resistor (E. V. R.) kit as shown in Fig. 1-3. (Part Number: YWV0EA1174AN)

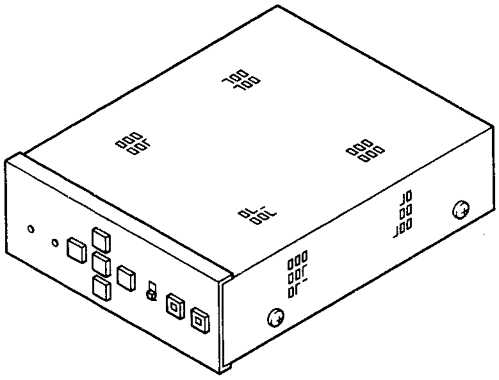


Fig. 1-3

- Make a conversion cable as follows.

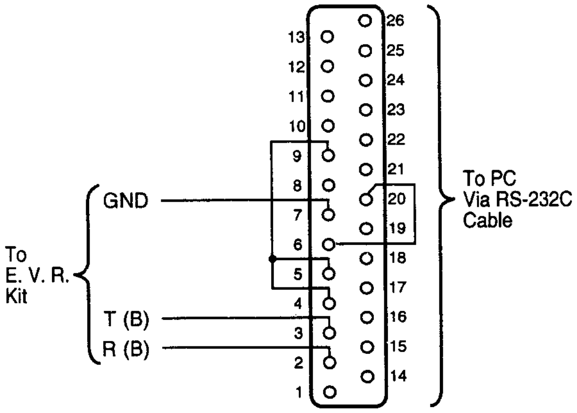


Fig. 1-4

2. Disassembling Procedure for Adjustment

- Referring to Fig. 2-1, remove two screws that secure the Camera Mounting Adaptor and remove the Camera Mounting Adaptor.

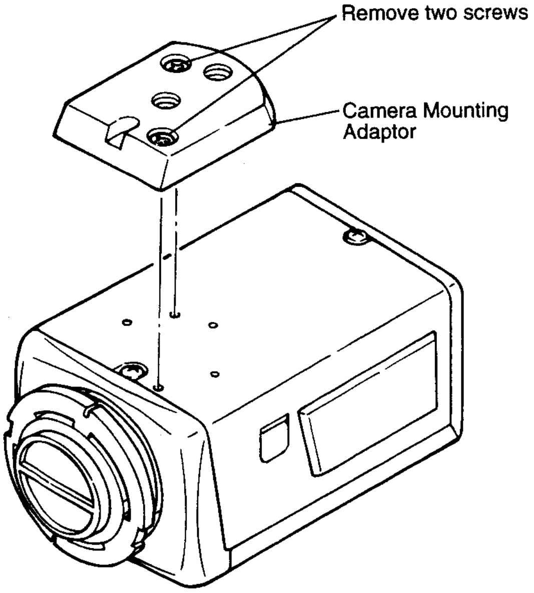

Remove two screws
Camera Mounting Adaptor

Fig. 2-1

- Referring to Fig. 2-2, remove two screws that secure the Cover and remove the Cover.

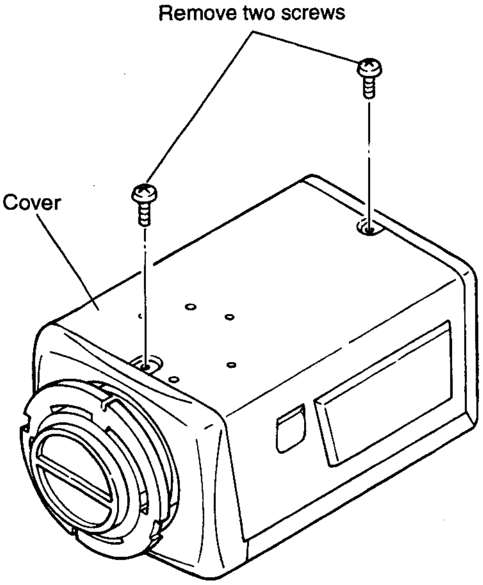

Remove two screws
Cover

Fig. 2-2

- Referring to Fig. 2-3, remove one screw that secure the Rear Escutcheon and Rear Panel and remove the Rear Escutcheon and Rear Panel.

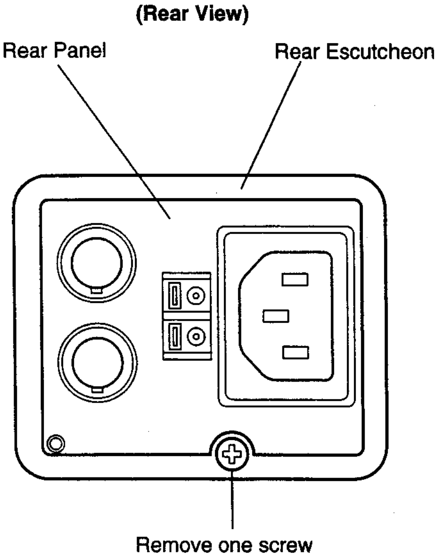

(Rear View)
Rear Panel
Rear Escutcheon
Remove one screw

Fig. 2-3

- Referring to Fig. 2-4, remove one screw that secure the Front Escutcheon Unit.

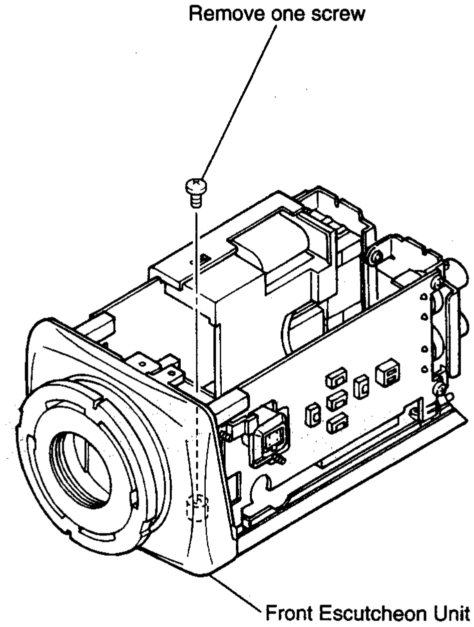

Remove one screw
Front Escutcheon Unit

Fig. 2-4

- Referring to Fig. 2-5, disconnect the connector CN2 on the Main Board that secure the I/F Board and Alarm Board and remove the I/F Board and Alarm Board.
- Remove one screw that secure the Earth Lug and Washer and remove the Earth Lug and Washer (For WV-BP550 only).
- Disconnect the connector CN4 on the Main Board and remove the Power Board.
- Remove four screws that secure the Main Board and remove the Main Board from the Chassis.

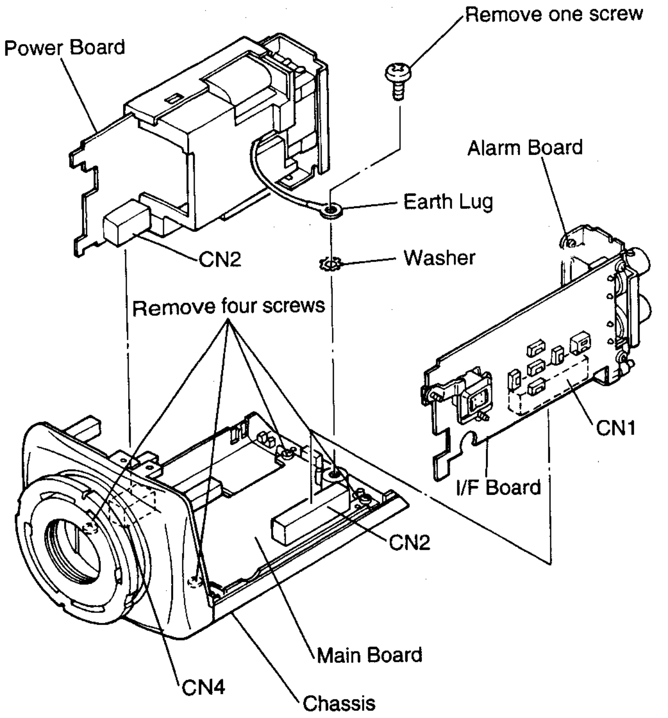

Remove one screw
Power Board
Alarm Board
Earth Lug
CN2
Washer
Remove four screws
CN1
I/F Board
CN2
Main Board
CN4
Chassis

Fig. 2-5

- Reconnect the Extension Cable, between CN4 on the Main Board and CN2 on the Power Board for Adjustment.
- Reconnect the I/F Board to the Main Board.

3. Head Optical Ass'y Replacement Procedure

- Disassemble the Camera while referring to the **2. Disassebling Procedure for Adjustment**.
- Referring to Fig. 3-1, remove two screws that secure the Core Mother Board on the Front Escutcheon Unit and remove the Head Optical Ass'y on the Front Escutcheon Unit.
- Replace Head Optical Ass'y with new one.

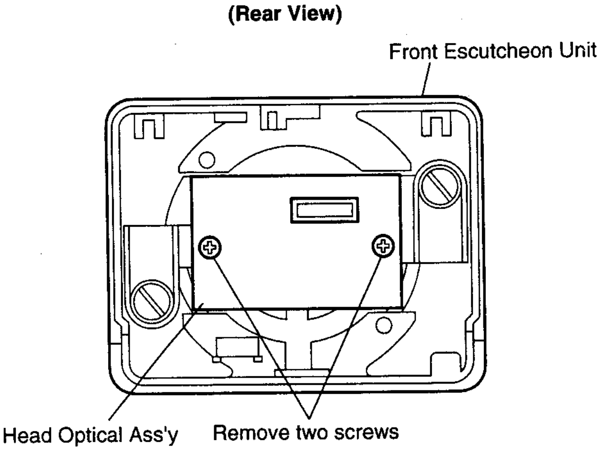

(Rear View)
Front Escutcheon Unit
Head Optical Ass'y
Remove two screws

Fig. 3-1

4. Connection and Setting Up for Adjustment

4.1. Connection

- The Fig. 4-1 shows the connecting diagram for the adjustment procedure.

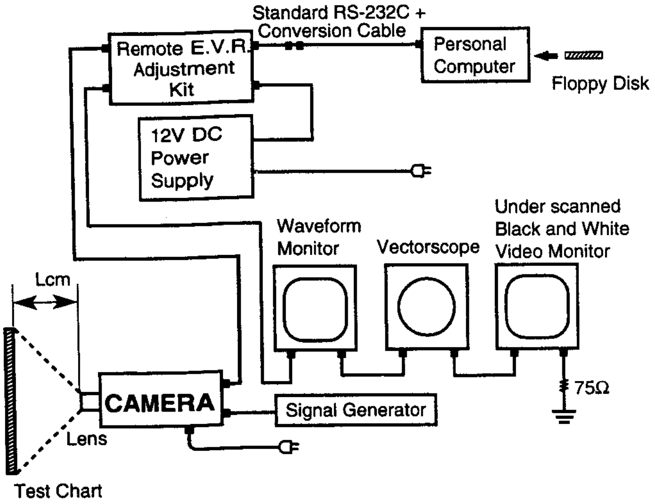

Standard RS-232C + Conversion Cable
Remote E.V.R. Adjustment Kit
Personal Computer
Floppy Disk
12V DC Power Supply
Waveform Monitor
Vectorscope
Under scanned Black and White Video Monitor
Lcm
CAMERA
Signal Generator
75Ω
Lens
Test Chart

Fig. 4-1

- Connect the Underscanned Black and White Video Monitor through the E.V.R. Kit, Waveform Monitor and Vectorscope to the Video Output Connector on the Rear Panel of the WV-BP550 or WV-BP554 using the coaxial cable.
- Terminate the input terminal of the Underscanned Black and White Video Monitor with 75Ω.
- **For the WV-BP554,**
  Connect the AC or DC power Units to the AC/DC Compatible Input Terminal on the Rear Panel of the WV-BP554.
- Connect the probe of the Digital Voltmeter, Oscilloscope or Frequency Counter at the desired Test Point each adjustment step.

4.2. Initial Position of the Switch for Adjustment

- An initial setting of the Switch on the Left side Panel of the WV-BP550 and WV-BP554 as follows:
  Gen-Lock Termination Switch
  (G/L 75Ω/Hi-Z) 75Ω
- The adjustments should be done with this initial setting, unless otherwise specified.

4.3. Setting Up for Standard Picture

- The adjustment should be done after 10 minutes warmup.
- Set the Logarithmic Gray Scale Chart.
- Mount the ALC Lens WV-LA12 on the Camera.
- Incident light of 2,750 ± 150 lux on the Logarithmic Gray Scale Chart.
- Aim the Camera at the Logarithmic Gray Scale Chart.
- Set the Camera so that the Logarithmic Gray Scale Chart becomes full picture on the Underscanned Black and White Video Monitor.
- Adjust the Lens Focus to obtain correct focal point.

5. Adjustment Procedure

- Refer to the Location of the Test Points and Adjusting Controls on the page 13.

■ Adjustment Procedure-1

1. Flange-back Adjustment

Test Point: **CN5 (Video Output Connector)** **I/F Board**
Adjust: **Flange-back Adjusting Ring**

- Mount the ALC Lens WV-LA12 on the Camera.
- Set the Radiation Chart.
- Aim the Camera at the Radiation Chart distance of 10m.
- Set the Lens Foucs Ring so that the Lens Foucs becomes approx. 9mm in front from infinity.
- Referring to Fig. 5-1, loosen two screws that secure the Flange-back Adjusting Ring.
- Adjust the Flange-back Adjusting Ring to obtain best focal point.

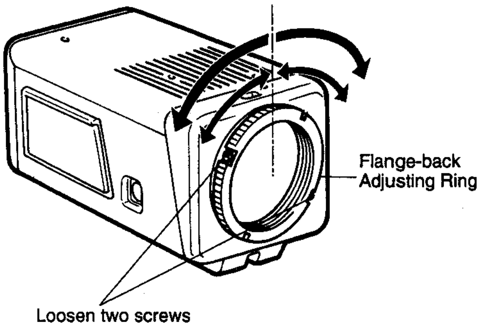
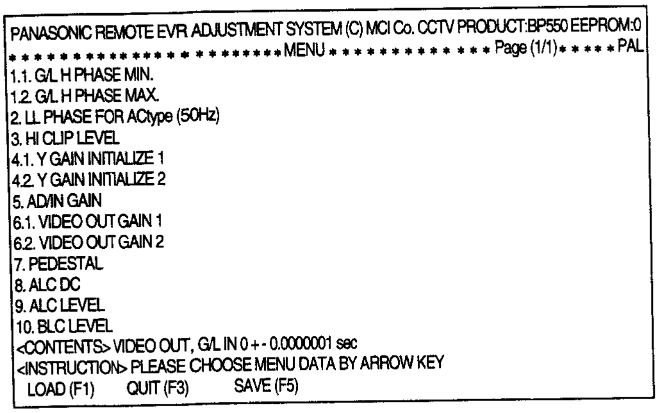

Flange-back Adjusting Ring
Loosen two screws

Fig. 5-1

- Tighten two screws that secure the Flange-back Adjusting Ring carefully.
- Change the ALC Lens to WV-LA9C3A from WV-LA12.

■ Adjustment Procedure-2 (E.V.R. Adjustment)

- Insert new disk containing DOS Operating System and the E.V.R. Adjustment program into IBM PC/AT and turns on the Power Switch of IBM PC/AT.
- At the prompt, type **ADJ3E BP550E** and press the **ENTER** key, an initial menu will be displayed in Table 5-1.



```
PANASONIC REMOTE EVR ADJUSTMENT SYSTEM (C) MCI Co. CCTV PRODUCT:BP550 EEPROM:0
************************MENU*************Page (1/1)*****PAL
1.1. G/L H PHASE MIN.
1.2. G/L H PHASE MAX.
2. LL PHASE FOR ACtype (50Hz)
3. HI CLIP LEVEL
4.1. Y GAIN INITIALIZE 1
4.2. Y GAIN INITIALIZE 2
5. AD/IN GAIN
6.1. VIDEO OUT GAIN 1
6.2. VIDEO OUT GAIN 2
7. PEDESTAL
8. ALC DC
9. ALC LEVEL
10. BLC LEVEL
<CONTENTS> VIDEO OUT, G/L IN 0 + - 0.0000001 sec
<INSTRUCTION> PLEASE CHOOSE MENU DATA BY ARROW KEY
 LOAD (F1)     QUIT (F3)      SAVE (F5)
```

Table 5-1

- Press the **SAVE(F5)** key of the Computer, then the Computer will ask you for the file name.
- Give appropriate file name to the Computer. But do not use **BP550E.EVR** for your file.
- This saving procedure is recommended to keep the current adjustment status of the Camera.
- Press the **LOAD(F1)** key and type **BP550E.EVR** and press the **ENTER** key for presetting adjustment of the Camera.

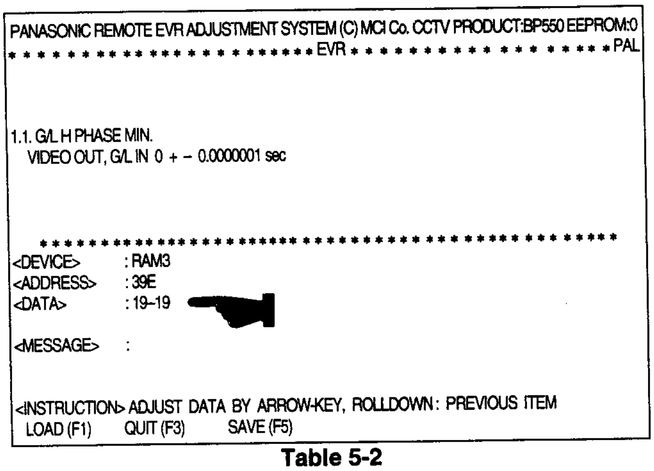
Notes:

- EEPROM mentioned in this adjustment procedure is IC3 on the Main Board.
- RAM mentioned in this adjustment procedure is IC1 on the Main Board.

1.1. G/L H-Phase (Min.) Adjustment

Test Point: **CN5 (Video Output Connector)** **I/F Board**
CN6 (G/L Input Connector) **I/F Board**
Adjust: **RAM3 (39E)** **Main Board**

- The menu as shown in Table 5-2 will be displayed.



```
PANASONIC REMOTE EVR ADJUSTMENT SYSTEM (C) MCI Co. CCTV PRODUCT:BP550 EEPROM:0
**************************EVR*********************PAL



1.1. G/L H PHASE MIN.
  VIDEO OUT, G/L IN 0 + - 0.0000001 sec



  *****************************************************
<DEVICE>      : RAM3
<ADDRESS>     : 39E
<DATA>        : 19-19

<MESSAGE>     :

<INSTRUCTION> ADJUST DATA BY ARROW-KEY, ROLLDOWN : PREVIOUS ITEM
 LOAD (F1)    QUIT (F3)      SAVE (F5)
```

Table 5-2

- Supply the Video signal (VS) to the Gen-Lock Input Connector on the Rear Panel of the Camera.
- Connect the CH1 of the Oscilloscope to the G/L Input Connector.
- Connect the CH2 of the Oscilloscope to the Video Output Connector.
- Adjust data with the **ARROW** keys so that the Video Out signal coincides to the G/L In signal as shown in Fig. 5-2

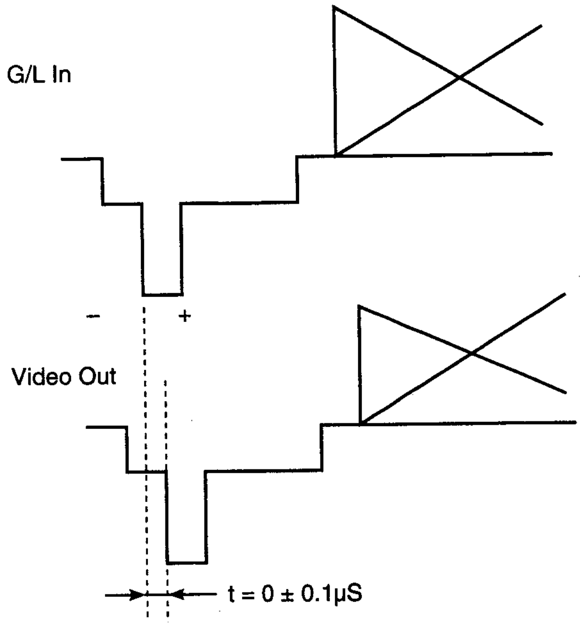


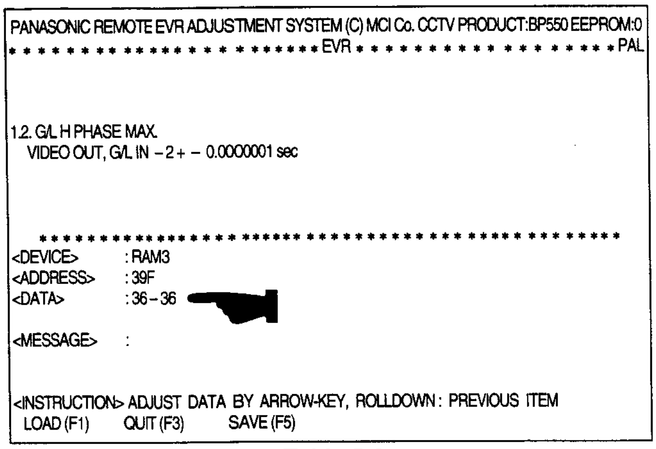
Fig. 5-2

- Press the **ENTER** key for next adjustment.

1.2. G/L H-Phase (Max.) Adjustment

Test Point:	**CN5 (Video Output Connector)**	**I/F Board**
	CN6 (G/L Input Connector)	**I/F Board**
Adjust:	**RAM3 (39F)**	**Main Board**

- The menu as shown in Table 5-3 will be displayed.



```
PANASONIC REMOTE EVR ADJUSTMENT SYSTEM (C) MCI Co. CCTV PRODUCT:BP550 EEPROM:0
* * * * * * * * * * * * * * * * * * * * * * * EVR * * * * * * * * * * * * * * * * * PAL

1.2. G/L H PHASE MAX.
  VIDEO OUT, G/L IN -2+ - 0.0000001 sec

* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
<DEVICE>      : RAM3
<ADDRESS>     : 39F
<DATA>        : 36-36

<MESSAGE>     :

<INSTRUCTION> ADJUST DATA BY ARROW-KEY, ROLLDOWN: PREVIOUS ITEM
  LOAD (F1)     QUIT (F3)     SAVE (F5)
```

Table 5-3

- Supply the Video signal (VS) to the Gen-Lock Input Connector on the Rear Panel of the Camera.
- Connect the CH1 of the Oscilloscope to the G/L Input Connector.
- Connect the CH2 of the Oscilloscope to the Video Output Connector.
- Adjust data with the **ARROW** keys so that the Video Out signal becomes as shown in Fig. 5-3.

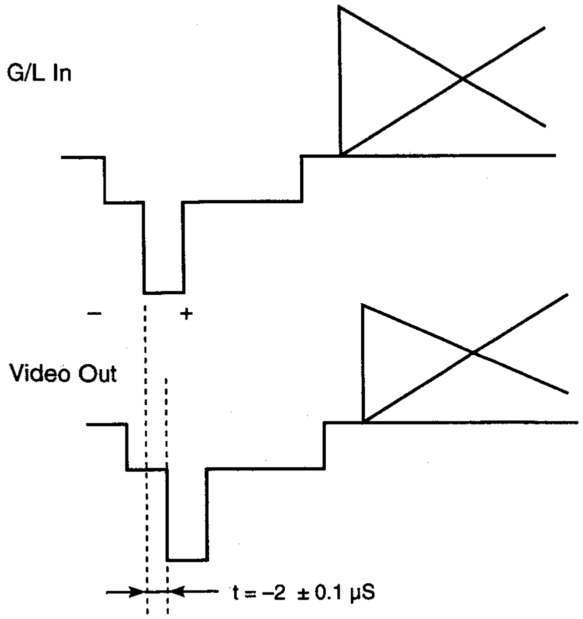


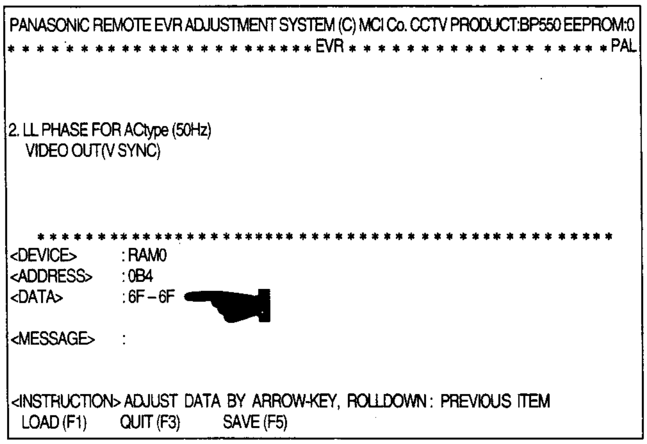
Fig. 5-3

- Press the **ENTER** key for next adjustment.

2. LL Phase Adjustment

Test Point:	**CN5 (Video Output Connector)**	**I/F Board**
	Pin 1 of CN1 (L)	**Power Board**
Adjust:	**RAM0 (0B4)**	**Main Board**

- The menu as shown in Table 5-4 will be displayed.



```
PANASONIC REMOTE EVR ADJUSTMENT SYSTEM (C) MCI Co. CCTV PRODUCT:BP550 EEPROM:0
* * * * * * * * * * * * * * * * * * * * * * * EVR * * * * * * * * * * * * * * * * * PAL

2. LL PHASE FOR ACtype (50Hz)
  VIDEO OUT(V SYNC)

* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
<DEVICE>      : RAM0
<ADDRESS>     : 0B4
<DATA>        : 6F-6F

<MESSAGE>     :

<INSTRUCTION> ADJUST DATA BY ARROW-KEY, ROLLDOWN: PREVIOUS ITEM
  LOAD (F1)     QUIT (F3)     SAVE (F5)
```

Table 5-4

- Connect the CH1 of the Oscilloscope to the Video Output Connector.
- Connect the CH2 of the Oscilloscope to the Pin 1 of CN1 on the Power Board.
- Trigger the Oscilloscope at V-rate.
- Adjust data with the **ARROW** keys so that the Decay point of V Sync signal delays 2H ± 4H from the zero cross point of the AC Power source as shown in Fig. 5-4.

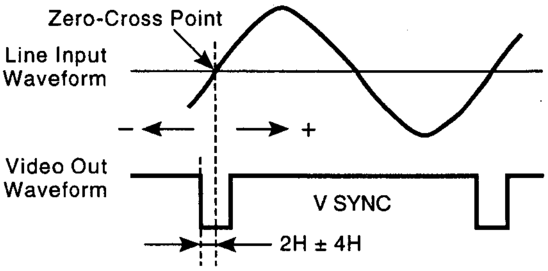


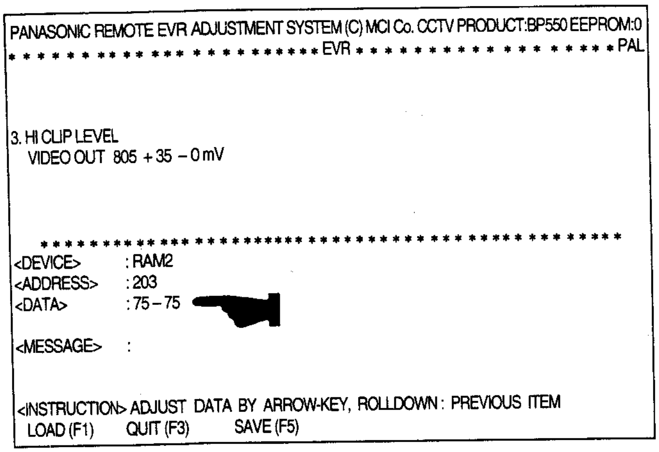
Fig. 5-4

- Press the **ENTER** key for next adjustment.

3. High Clip Adjustment

Test Point: **CN5 (Video Output Connector)** **I/F Board**
Adjust: **RAM2 (203)** **Main Board**

- The menu as shown in Table 5-5 will be displayed.



```
PANASONIC REMOTE EVR ADJUSTMENT SYSTEM (C) MCI Co. CCTV PRODUCT:BP550 EEPROM:0
* * * * * * * * * * * * * * * * * * * * * * * EVR * * * * * * * * * * * * * * * * * * * * PAL

3. HI CLIP LEVEL
   VIDEO OUT  805 +35 - 0 mV

  * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
<DEVICE>     : RAM2
<ADDRESS>    : 203
<DATA>       : 75 - 75

<MESSAGE>    :

<INSTRUCTION> ADJUST DATA BY ARROW-KEY, ROLLDOWN : PREVIOUS ITEM
 LOAD (F1)     QUIT (F3)       SAVE (F5)
```

Table 5-5

- Change the Colour Temperature from 5100K to 3200K by mount the Filter W12 on the Lens.
- Aim the Camera at the Logarithmic Gray Scale Chart.
- Connect the Oscilloscope to the Video Output Connector.
- Adjust data with the **ARROW** keys so that signal level becomes 805 $^{+35}_{-0}$ mV as shown in Fig. 5-5.

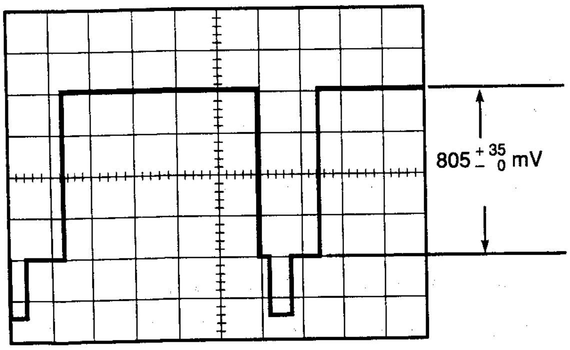


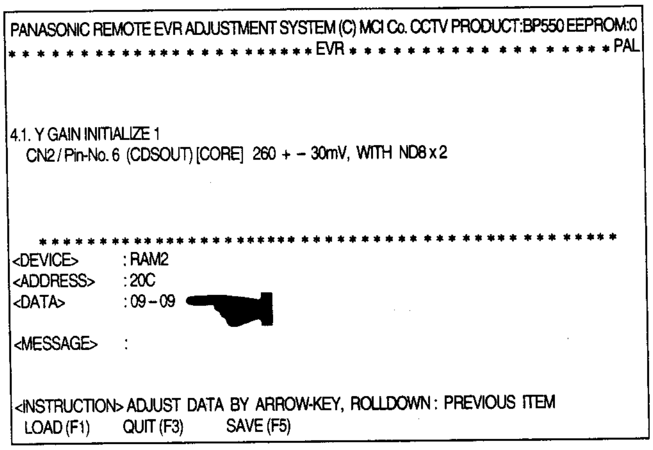
Fig. 5-5

- Press the **ENTER** key for next adjustment.

4.1. Y Gain Initialize 1 Adjustment

Test Point: **Pin 6 of CN2 (CDSOUT) Core Mother Board**
Adjust: **RAM2 (20C)** **Main Board**

- The menu as shown in Table 5-6 will be displayed.



```
PANASONIC REMOTE EVR ADJUSTMENT SYSTEM (C) MCI Co. CCTV PRODUCT:BP550 EEPROM:0
* * * * * * * * * * * * * * * * * * * * * * * * * EVR * * * * * * * * * * * * * * * * * * * * PAL

4.1. Y GAIN INITIALIZE 1
  CN2 / Pin-No. 6  (CDSOUT) [CORE]  260 + - 30mV,  WITH  ND8 x 2

  * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
<DEVICE>     : RAM2
<ADDRESS>    : 20C
<DATA>       : 09 - 09

<MESSAGE>    :

<INSTRUCTION> ADJUST DATA BY ARROW-KEY, ROLLDOWN : PREVIOUS ITEM
 LOAD (F1)     QUIT (F3)       SAVE (F5)
```

Table 5-6

- Keep the Colour Temperature at 3200K.
- Aim the Camera at the Logarithmic Gray Scale Chart.
- Mount the ND16 Filter on the Lens.
- Connect the Oscilloscope to the Pin Number 6 of CN2.
- Adjust data with the **ARROW** keys so that CDS OUT signal level becomes 260 ± 30 mV as shown in Fig. 5-6.

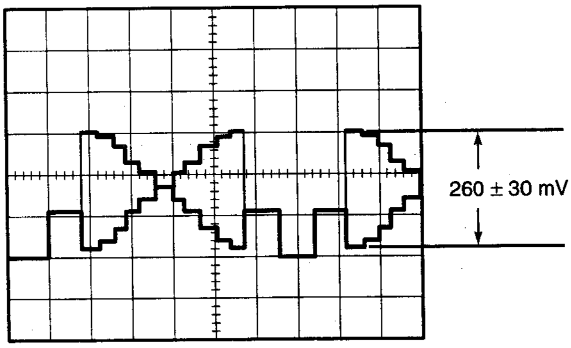


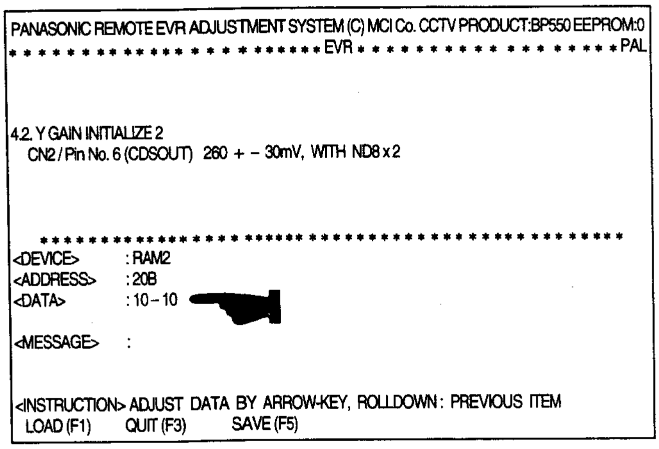
Fig. 5-6

- Press the **ENTER** key for next adjustment.

4.2. Y Gain Initialize 2 Adjustment

Test Point: **Pin 6 of CN2 (CDSOUT) Core Mother Board**
Adjust: **RAM2 (20B)** **Main Board**

- The menu as shown in Table 5-7 will be displayed.



```
PANASONIC REMOTE EVR ADJUSTMENT SYSTEM (C) MCI Co. CCTV PRODUCT:BP550 EEPROM:0
* * * * * * * * * * * * * * * * * * * * * * * * EVR * * * * * * * * * * * * * * * * * * * PAL

4.2. Y GAIN INITIALIZE 2
  CN2 / Pin No. 6 (CDSOUT)  260 + - 30mV, WITH ND8 x 2

* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
<DEVICE>      : RAM2
<ADDRESS>     : 20B
<DATA>        : 10 - 10

<MESSAGE>   :

<INSTRUCTION> ADJUST DATA BY ARROW-KEY, ROLLDOWN : PREVIOUS ITEM
  LOAD (F1)     QUIT (F3)      SAVE (F5)
```

Table 5-7

- Keep the Colour Temperature at 3200K.
- Aim the Camera at the Logarithmic Gray Scale Chart.
- Mount the ND16 Filter on the Lens.
- Connect the Oscilloscope to the Pin Number 6 of CN2.
- Adjust data with the **ARROW** keys so that CDS OUT signal level becomes 260 ± 30 mV as shown in Fig. 5-7.

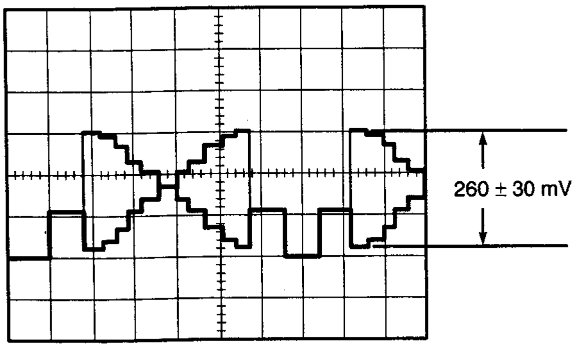


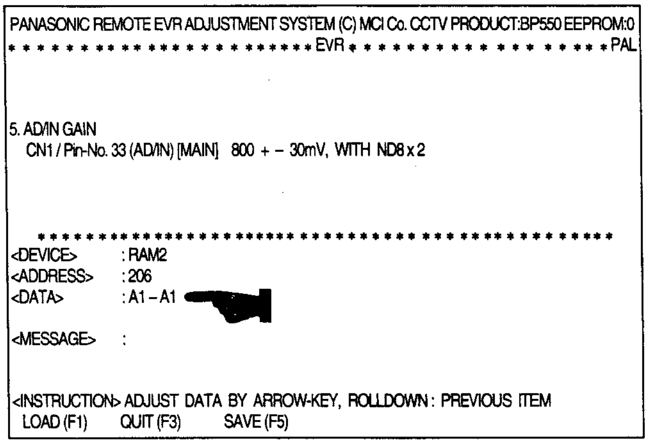
Fig. 5-7

- Press the **ENTER** key for next adjustment.

5. AD/IN Gain Adjustment

Test Point: **Pin 33 of CN1 (AD/IN)** **Main Board**
Adjust: **RAM2 (206)** **Main Board**

- The menu as shown in Table 5-8 will be displayed.



```
PANASONIC REMOTE EVR ADJUSTMENT SYSTEM (C) MCI Co. CCTV PRODUCT:BP550 EEPROM:0
* * * * * * * * * * * * * * * * * * * * * * * * EVR * * * * * * * * * * * * * * * * * * * PAL

5. AD/IN GAIN
  CN1 / Pin-No. 33 (AD/IN) [MAIN]  800 + - 30mV, WITH ND8 x 2

* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
<DEVICE>      : RAM2
<ADDRESS>     : 206
<DATA>        : A1 - A1

<MESSAGE>   :

<INSTRUCTION> ADJUST DATA BY ARROW-KEY, ROLLDOWN : PREVIOUS ITEM
  LOAD (F1)     QUIT (F3)      SAVE (F5)
```

Table 5-8

- Keep the Colour Temperature at 3200K.
- Aim the Camera at the Logarithmic Gray Scale Chart.
- Mount the ND16 Filter on the Lens.
- Connect the Oscilloscope to the Pin Number 33 of CN1.
- Adjust data with the **ARROW** keys so that AD/IN signal level becomes 800 ± 30 mV as shown in Fig. 5-8.

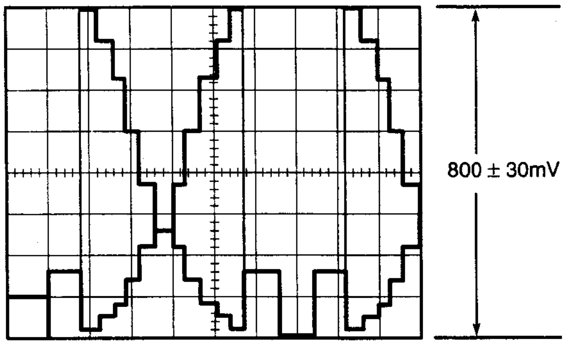


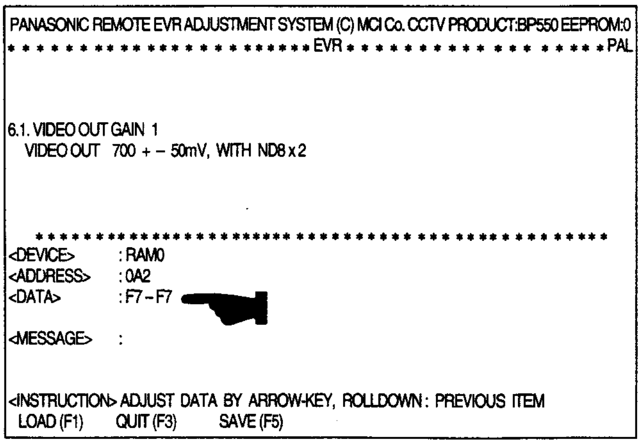
Fig. 5-8

- Press the **ENTER** key for next adjustment.

6.1. Video Out Gain 1 Adjustment

Test Point: **CN5 (Video Output Connector)** **I/F Board**
Adjust: **RAM0 (0A2)** **Main Board**

- The menu as shown in Table 5-9 will be displayed.



```
PANASONIC REMOTE EVR ADJUSTMENT SYSTEM (C) MCI Co. CCTV PRODUCT:BP550 EEPROM:0
* * * * * * * * * * * * * * * * * * * * * * * * EVR * * * * * * * * * * * * * * * * * * * PAL

6.1. VIDEO OUT GAIN 1
  VIDEO OUT   700 + - 50mV, WITH ND8 x 2

* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
<DEVICE>      : RAM0
<ADDRESS>     : 0A2
<DATA>        : F7 - F7

<MESSAGE>   :

<INSTRUCTION> ADJUST DATA BY ARROW-KEY, ROLLDOWN : PREVIOUS ITEM
  LOAD (F1)     QUIT (F3)      SAVE (F5)
```

Table 5-9

- Keep the Colour Temperature at 3200K.
- Aim the Camera at the Logarithmic Gray Scale Chart.
- Mount the ND16 Filter on the Lens.
- Connect the Oscilloscope to the Video Output Connector.
- Adjust data with the **ARROW** keys so that Video signal level becomes 700 ± 50 mV as shown in Fig. 5-9.

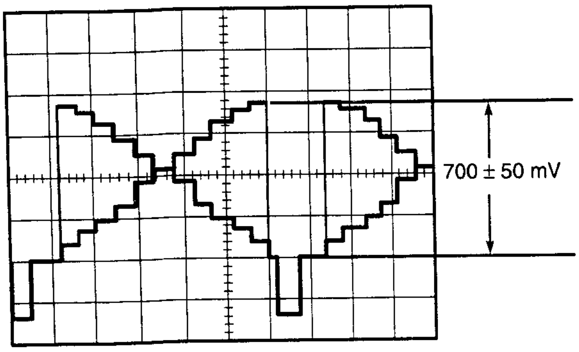


Fig. 5-9

- Press the **ENTER** key for next adjustment.

6.2. Video Out Gain 2 Adjustment

Test Point: CN5 (Video Output Connector) **I/F Board**
Adjust: RAM0 (0A3) **Main Board**

- The menu as shown in Table 5-10 will be displayed.

```
PANASONIC REMOTE EVR ADJUSTMENT SYSTEM (C) MCI Co. CCTV PRODUCT:BP550 EEPROM:0
* * * * * * * * * * * * * * * * * * * * * * * * EVR * * * * * * * * * * * * * * * * * * PAL


6.2. VIDEO OUT GAIN 2
  VIDEO OUT  700 + - 50mV, WITH ND8 x 2


  ****************************************************************
<DEVICE>      : RAM0
<ADDRESS>     : 0A3
<DATA>        : 00 - 00

<MESSAGE>     :

<INSTRUCTION> ADJUST DATA BY ARROW-KEY, ROLLDOWN : PREVIOUS ITEM
  LOAD (F1)     QUIT (F3)      SAVE (F5)
```

Table 5-10

- Keep the Colour Temperature at 3200K.
- Aim the Camera at the Logarithmic Gray Scale Chart.
- Mount the ND16 Filter on the Lens.
- Connect the Oscilloscope to the Video Output Connector.
- Adjust data with the **ARROW** keys so that Video signal level becomes 700 ± 50 mV as shown in Fig. 5-10.

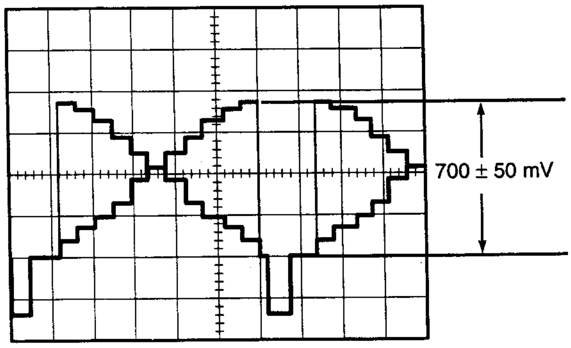


Fig. 5-10

- Press the **ENTER** key for next adjustment.

- Press the **ENTER** key for next adjustment.

7. Pedestal Adjustment

Test Point: CN5 (Video Output Connector) **I/F Board**
Adjust: RAM0 (0B2) **Main Board**

- The menu as shown in Table 5-11 will be displayed.

```
PANASONIC REMOTE EVR ADJUSTMENT SYSTEM (C) MCI Co. CCTV PRODUCT:BP550 EEPROM:0
* * * * * * * * * * * * * * * * * * * * * * * * EVR * * * * * * * * * * * * * * * * * * PAL


7. PEDESTAL
  VIDEO OUT   PEDESTAL  50 mV + - 5mV


  ****************************************************************
<DEVICE>      : RAM0
<ADDRESS>     : 0B2
<DATA>        : 17 - 17

<MESSAGE>     :

<INSTRUCTION> ADJUST DATA BY ARROW-KEY, ROLLDOWN : PREVIOUS ITEM
  LOAD (F1)     QUIT (F3)      SAVE (F5)
```

Table 5-11

- Connect the Oscilloscope to the Video Output Connector.
- Adjust data with the **ARROW** keys so that Pedestal level becomes 50 ± 5 mV as shown in Fig. 5-11.

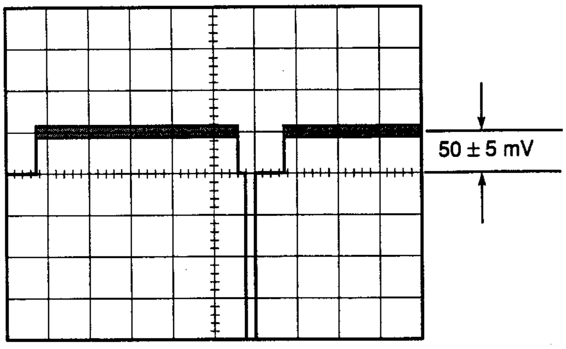


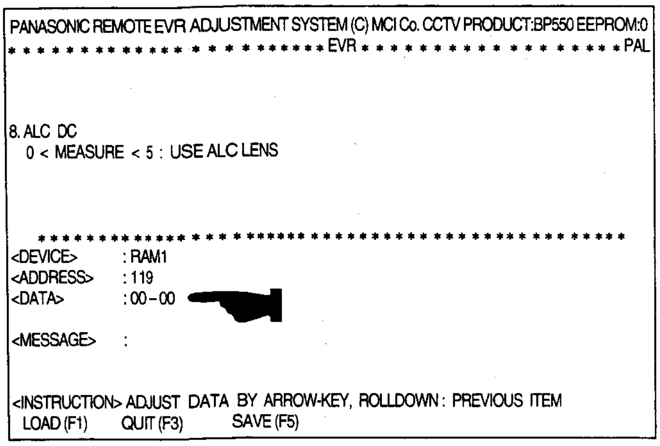
Fig. 5-11

- Press the **ENTER** key for next adjustment.

8. ALC DC Adjustment

Test Point: **CN5 (Video Output Connector)** **I/F Board**
Adjust: **RAM1 (119)** **Main Board**

- The menu as shown in Table 5-12 will be displayed.



```
PANASONIC REMOTE EVR ADJUSTMENT SYSTEM (C) MCI Co. CCTV PRODUCT:BP550 EEPROM:0
*************************EVR********************PAL

8. ALC DC
  0 < MEASURE < 5 : USE ALC LENS

  ***************************************************
<DEVICE>      : RAM1
<ADDRESS>     : 119
<DATA>        : 00-00

<MESSAGE>     :

<INSTRUCTION> ADJUST DATA BY ARROW-KEY, ROLLDOWN : PREVIOUS ITEM
  LOAD (F1)     QUIT (F3)     SAVE (F5)
```

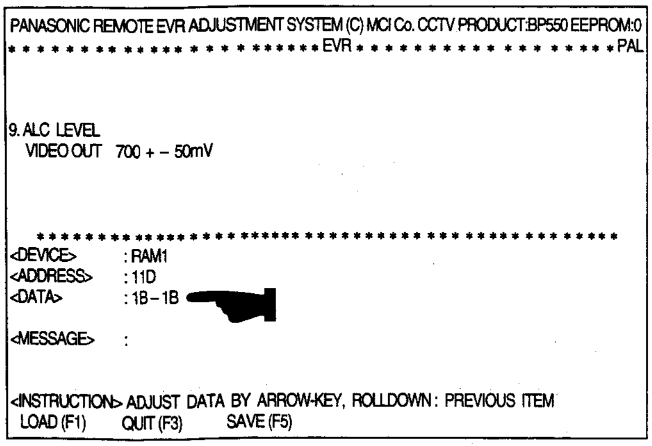
Table 5-12

- Keep the Colour Temperature at 3200K.
- Aim the Camera at the Logarithmic Gray Scale Chart.
- Adjust data with the **ARROW** keys so that the measure level becomes 00 and 05.
- Press the **ENTER** key for next adjustment.

9. ALC Level Adjustment

Test Point: **CN5 (Video Output Connector)** **I/F Board**
Adjust: **RAM1 (11D)** **Main Board**

- The menu as shown in Table 5-13 will be displayed.



```
PANASONIC REMOTE EVR ADJUSTMENT SYSTEM (C) MCI Co. CCTV PRODUCT:BP550 EEPROM:0
*************************EVR********************PAL

9. ALC LEVEL
  VIDEO OUT  700 + - 50mV

  ***************************************************
<DEVICE>      : RAM1
<ADDRESS>     : 11D
<DATA>        : 1B-1B

<MESSAGE>     :

<INSTRUCTION> ADJUST DATA BY ARROW-KEY, ROLLDOWN : PREVIOUS ITEM
  LOAD (F1)     QUIT (F3)     SAVE (F5)
```

Table 5-13

- Keep the Colour Temperature at 3200K.
- Aim the Camera at the Logarithmic Gray Scale Chart.
- Connect the Oscilloscope to the Video Output Connector.
- Adjust data with the **ARROW** keys so that the video signal level becomes 700 ± 50 mV as shown in Fig. 5-12.

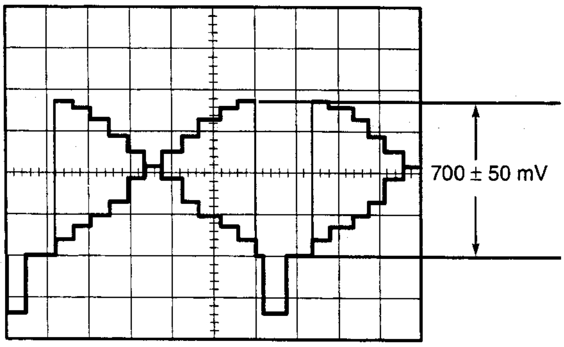


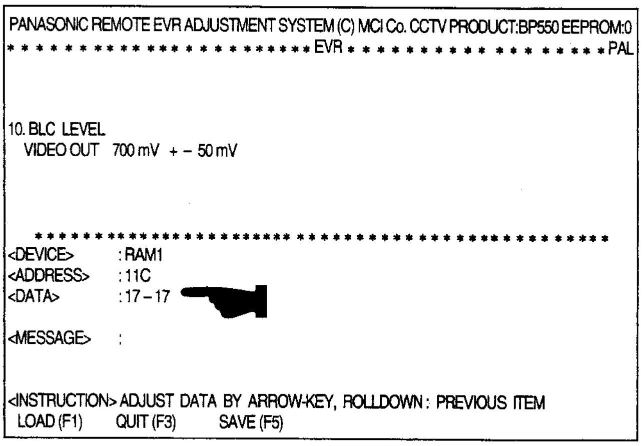
Fig. 5-12

- Press the **ENTER** key for next adjustment.

10. BLC Level Adjustment

Test Point: **CN5 (Video Output Connector)** **I/F Board**
Adjust: **RAM1 (11C)** **Main Board**

- The menu as shown in Table 5-14 will be displayed.



```
PANASONIC REMOTE EVR ADJUSTMENT SYSTEM (C) MCI Co. CCTV PRODUCT:BP550 EEPROM:0
*************************EVR********************PAL

10. BLC LEVEL
  VIDEO OUT  700 mV  + - 50 mV

  ***************************************************
<DEVICE>      : RAM1
<ADDRESS>     : 11C
<DATA>        : 17-17

<MESSAGE>     :

<INSTRUCTION> ADJUST DATA BY ARROW-KEY, ROLLDOWN : PREVIOUS ITEM
  LOAD (F1)     QUIT (F3)     SAVE (F5)
```

Table 5-14

- Keep the Colour Temperature at 3200K.
- Aim the Camera at the Logarithmic Gray Scale Chart.
- Connect the Oscilloscope to the Video Output Connector.
- Adjust data with the **ARROW** keys so that the video signal level becomes 700 ± 50 mV as shown in Fig. 5-13.

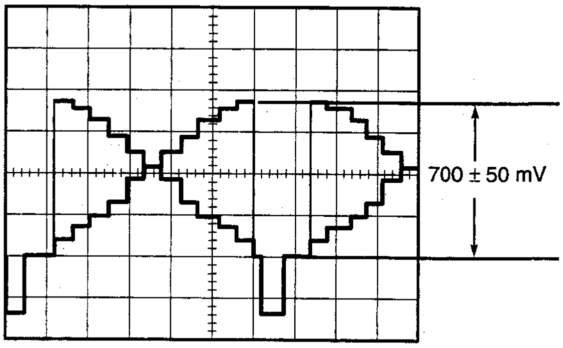
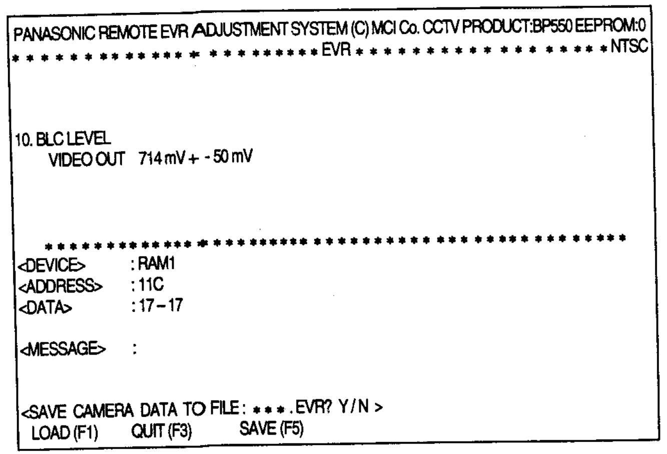


Fig. 5-13

- After completing of the adjustment, press the **QUIT (F3)** key, then the menu as shown in Table 5-15 will be displayed

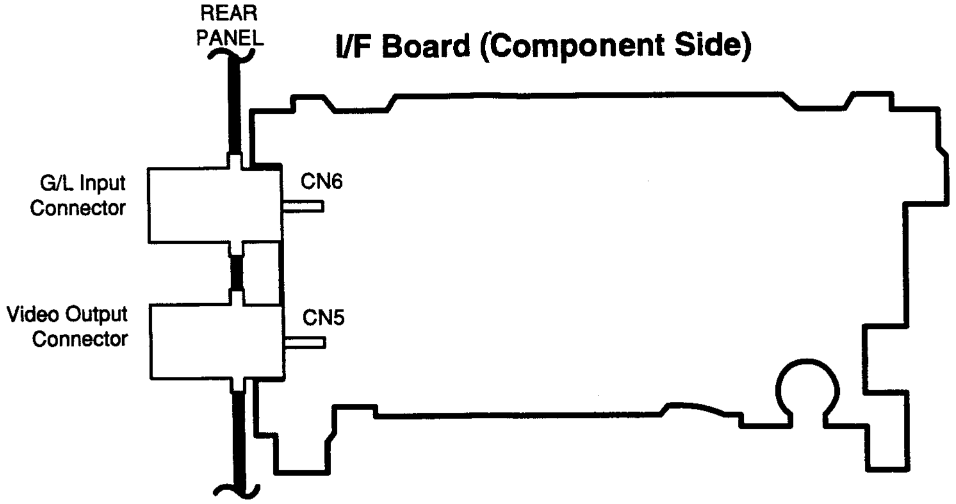


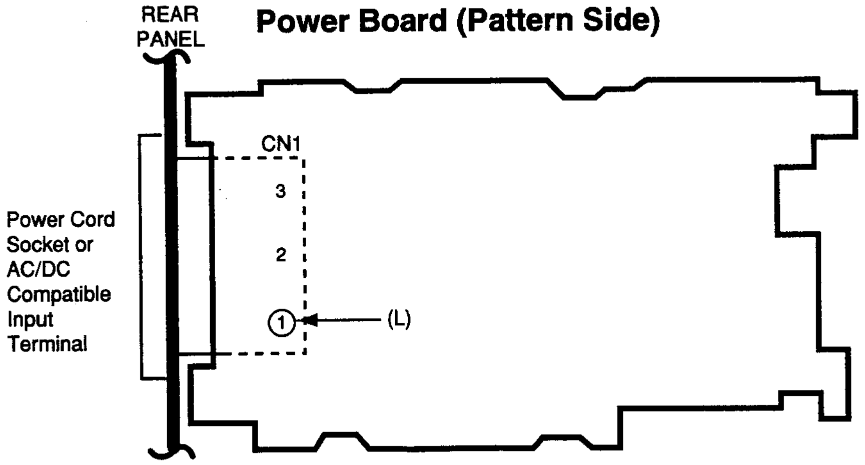
```
PANASONIC REMOTE EVR ADJUSTMENT SYSTEM (C) MCI Co. CCTV PRODUCT:BP550 EEPROM:0
* * * * * * * * * * * * * * * * * * * * * * * * EVR * * * * * * * * * * * * * * * * * * * * * *NTSC



10. BLC LEVEL
    VIDEO OUT   714 mV + - 50 mV



   * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
<DEVICE>       : RAM1
<ADDRESS>      : 11C
<DATA>         : 17 - 17

<MESSAGE>      :


<SAVE  CAMERA  DATA  TO  FILE : * * * .EVR? Y / N >
 LOAD (F1)      QUIT (F3)       SAVE (F5)
```

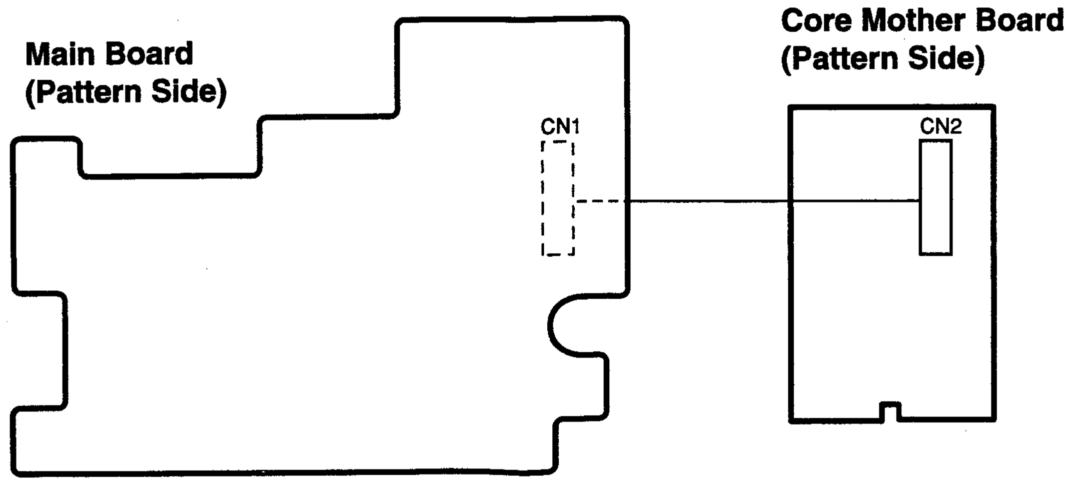
Table 5-15

- Press the **N** key, and then press the **ENTER** key to finish of this adjustment procedure.

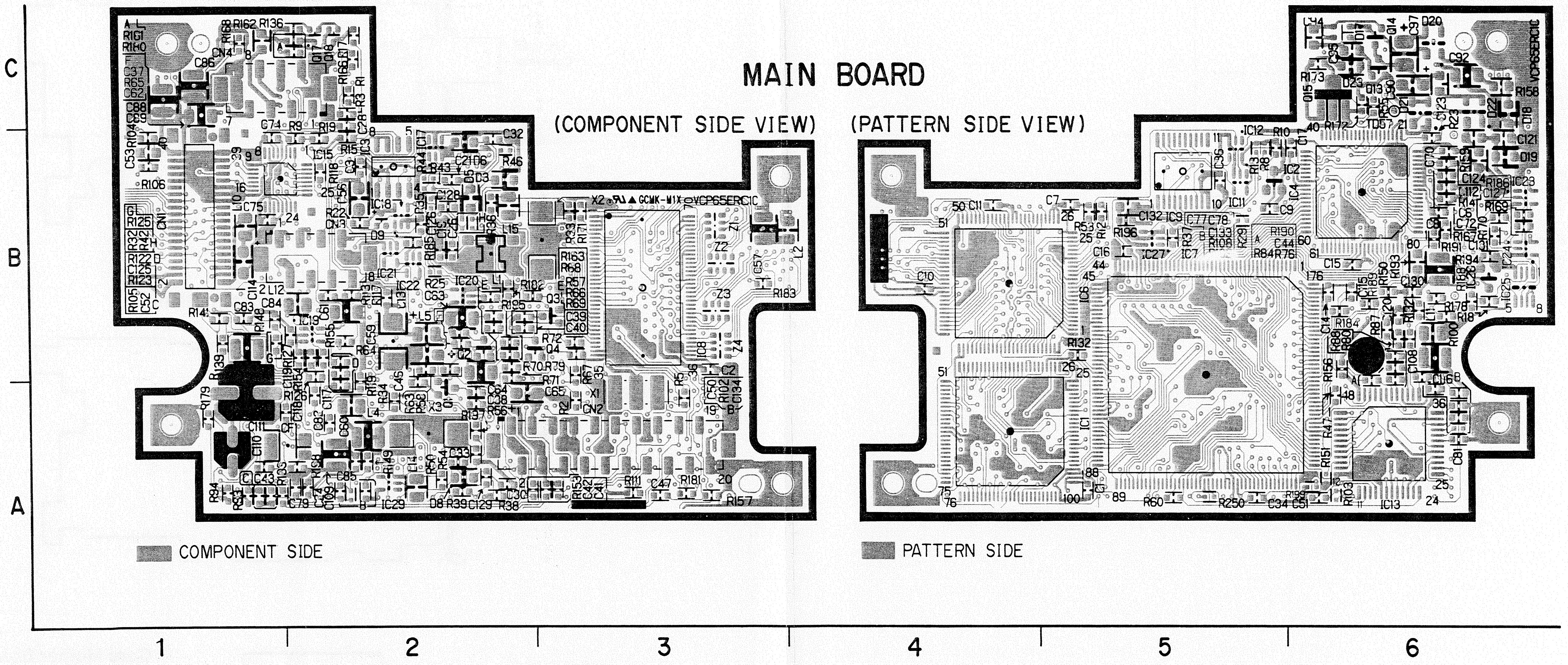
LOCATION OF TEST POINTS AND ADJUSTING CONTROLS


REAR PANEL
I/F Board (Component Side)
G/L Input Connector
CN6
Video Output Connector
CN5


REAR PANEL
Power Board (Pattern Side)
CN1
3
2
①
(L)
Power Cord Socket or AC/DC Compatible Input Terminal


Main Board (Pattern Side)
CN1
Core Mother Board (Pattern Side)
CN2

CONDUCTOR VIEW OF MAIN BOARD

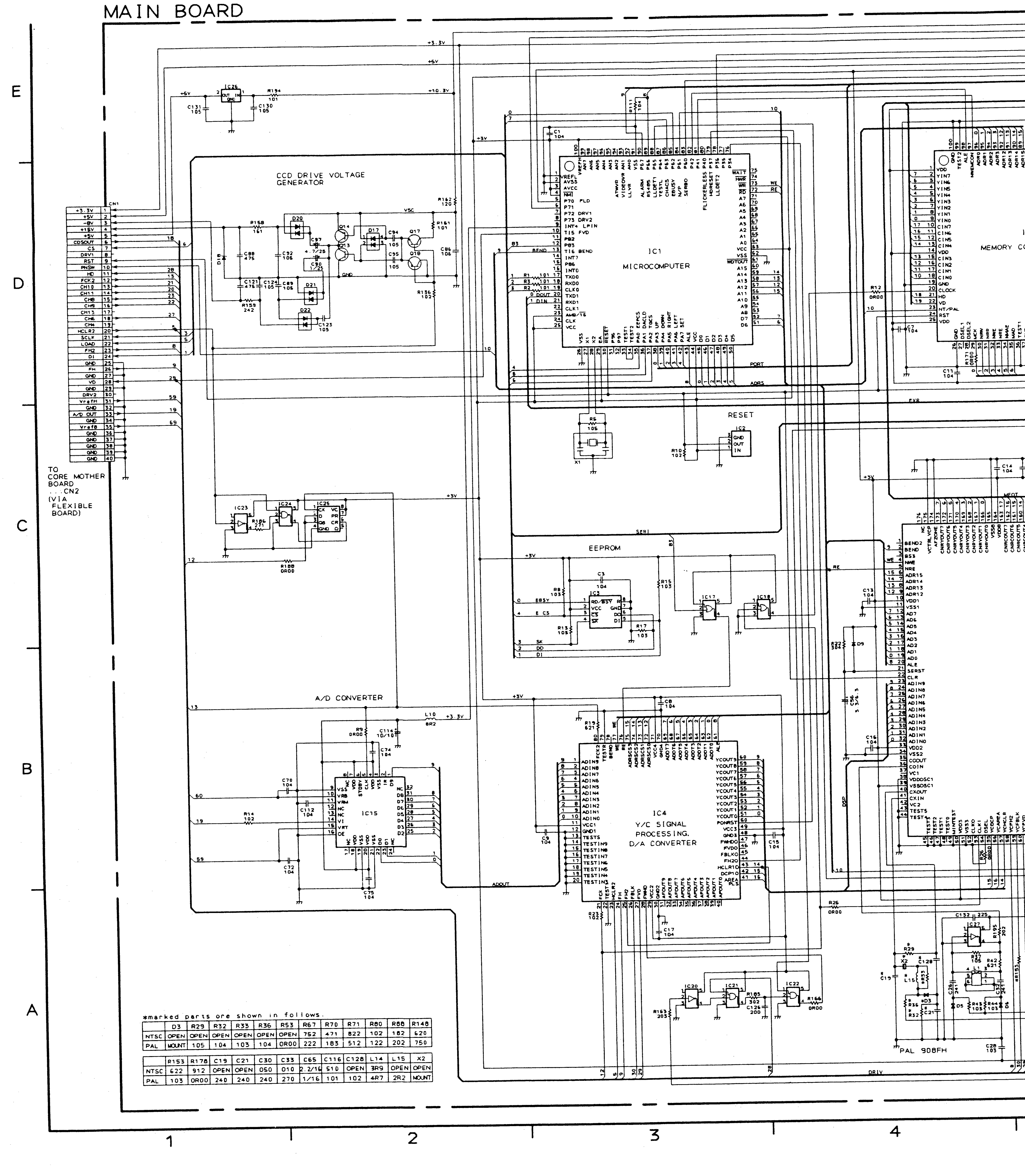

MAIN BOARD
(COMPONENT SIDE VIEW)
(PATTERN SIDE VIEW)
COMPONENT SIDE
PATTERN SIDE
C
B
A
1
2
3
4
5
6

<Index>

MAIN BOARD

IC1	A5
IC2	B6
IC3	B2
IC4	B6
IC6	B5
IC7	B5
IC8	B3
IC9	B5
IC11	B5
IC12	B5
IC13	A6
IC15	B2
IC17	B2
IC18	B2
IC19	B2
IC20	B2
IC21	B2
IC22	B2
IC23	B6
IC24	B6
IC25	B6
IC26	B6
IC27	B5
IC29	A2
Q2	B2
Q3	B3
Q4	B3
Q13	C6
Q14	C6
Q15	C6
Q17	C2
Q18	C2
D3	B2
D5	B2
D6	B2
D8	A2
D9	B2
D17	C6
D18	C6
D20	C6
D21	C6
D22	C6
D23	C6

SCHEMATIC DIAGRA

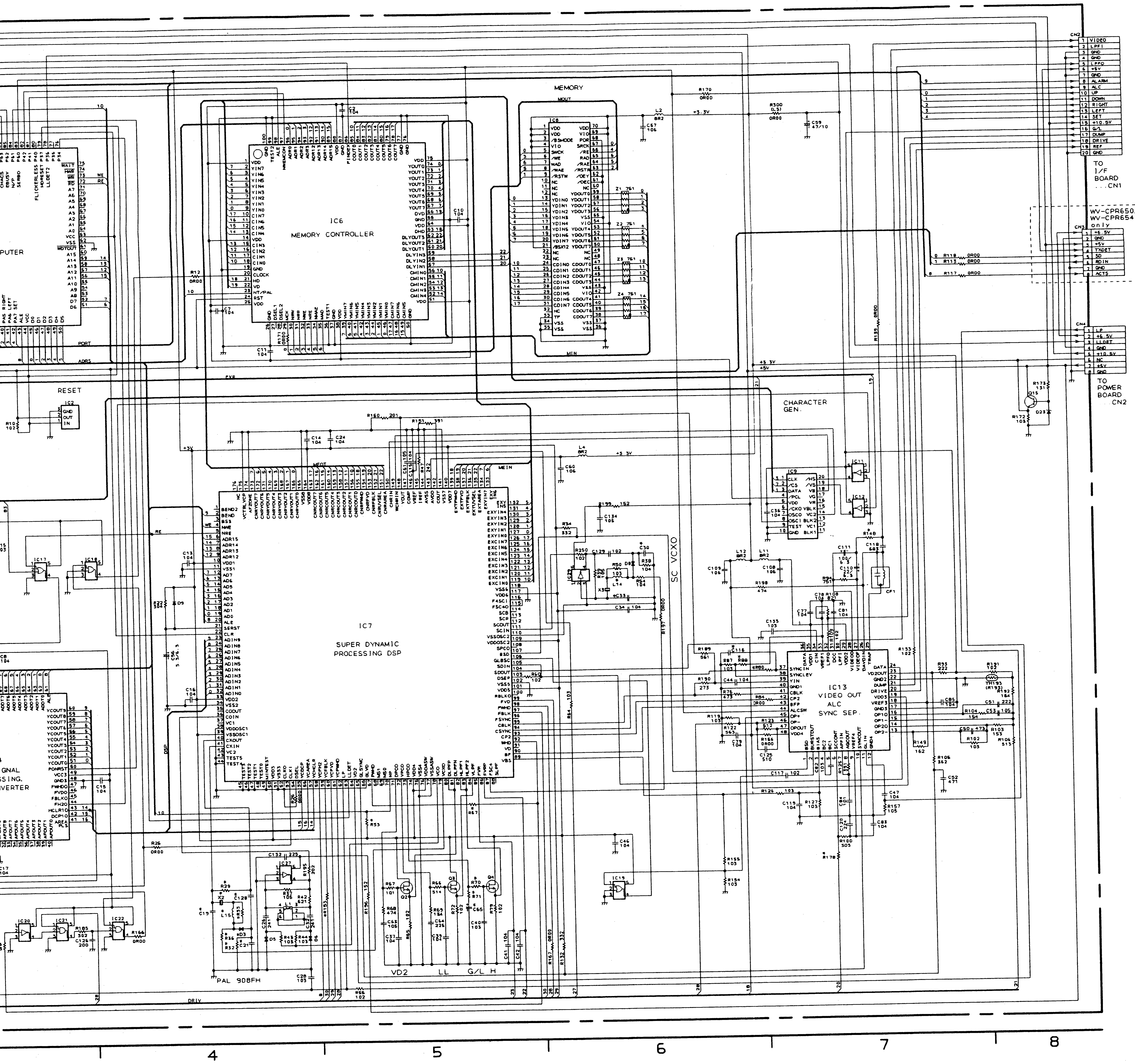

MAIN BOARD
CCD DRIVE VOLTAGE GENERATOR
IC1
MICROCOMPUTER
RESET
EEPROM
A/D CONVERTER
IC15
IC4
Y/C SIGNAL PROCESSING,
D/A CONVERTER
MEMORY C
TO CORE MOTHER BOARD ...CN2 (VIA FLEXIBLE BOARD)
CN1
+3.3V
+5V
-8V
+15V
CDSOUT
CS
DRV1
RST
PNSW
HD
FCK2
CH10
CH11
CH8
CH9
CH13
CH6
CH4
HCLR2
SCLK
LOAD
FH2
DI
GND
FH
VD
DRV2
A/D OUT
Vref8
PAL 908FH
ADOUT
SERI
DRIV
E
D
C
B
A
1
2
3
4

*marked parts are shown in follows.

	D3	R29	R32	R33	R36	R53	R67	R70	R71	R80	R88	R148
NTSC	OPEN	OPEN	OPEN	OPEN	OPEN	OPEN	752	471	822	102	182	620
PAL	MOUNT	105	104	103	104	0R00	222	183	512	122	202	750

	R153	R178	C19	C21	C30	C33	C65	C116	C128	L14	L15	X2
NTSC	622	912	OPEN	OPEN	050	010	2.2/16	510	OPEN	3R9	OPEN	OPEN
PAL	103	0R00	240	240	240	270	1/16	101	102	4R7	2R2	MOUNT

SCHEMATIC DIAGRAM OF MAIN BOARD



IC6
MEMORY CONTROLLER
IC7
SUPER DYNAMIC PROCESSING DSP
IC8
MEMORY
IC9
CHARACTER GEN.
IC13
VIDEO OUT
ALC
SYNC SEP.
SC VCXO
RESET
IC2
PUTER
GNAL
SSING
VERTER
PAL 908FH
VD2
LL
G/L H
CN2
VIDEO
LPFI
GND
GND
LPFO
+5V
GND
ALARM
ALC
UP
DOWN
RIGHT
LEFT
SET
+10.5V
G/L
DUMP
DRIVE
REF
GND
TO I/F BOARD ...CN1
WV-CPR650/
WV-CPR654
only
CN3
+6.5V
GND
+5V
TXDET
SD
RDIN
GND
ACTS
CN4
LP
+6.5V
GND
LLDET
GND
+10.5V
NC
+5V
GND
TO POWER BOARD ...CN2
4
5
6
7
8

Note: The value indicate

☐ ☐ ☐

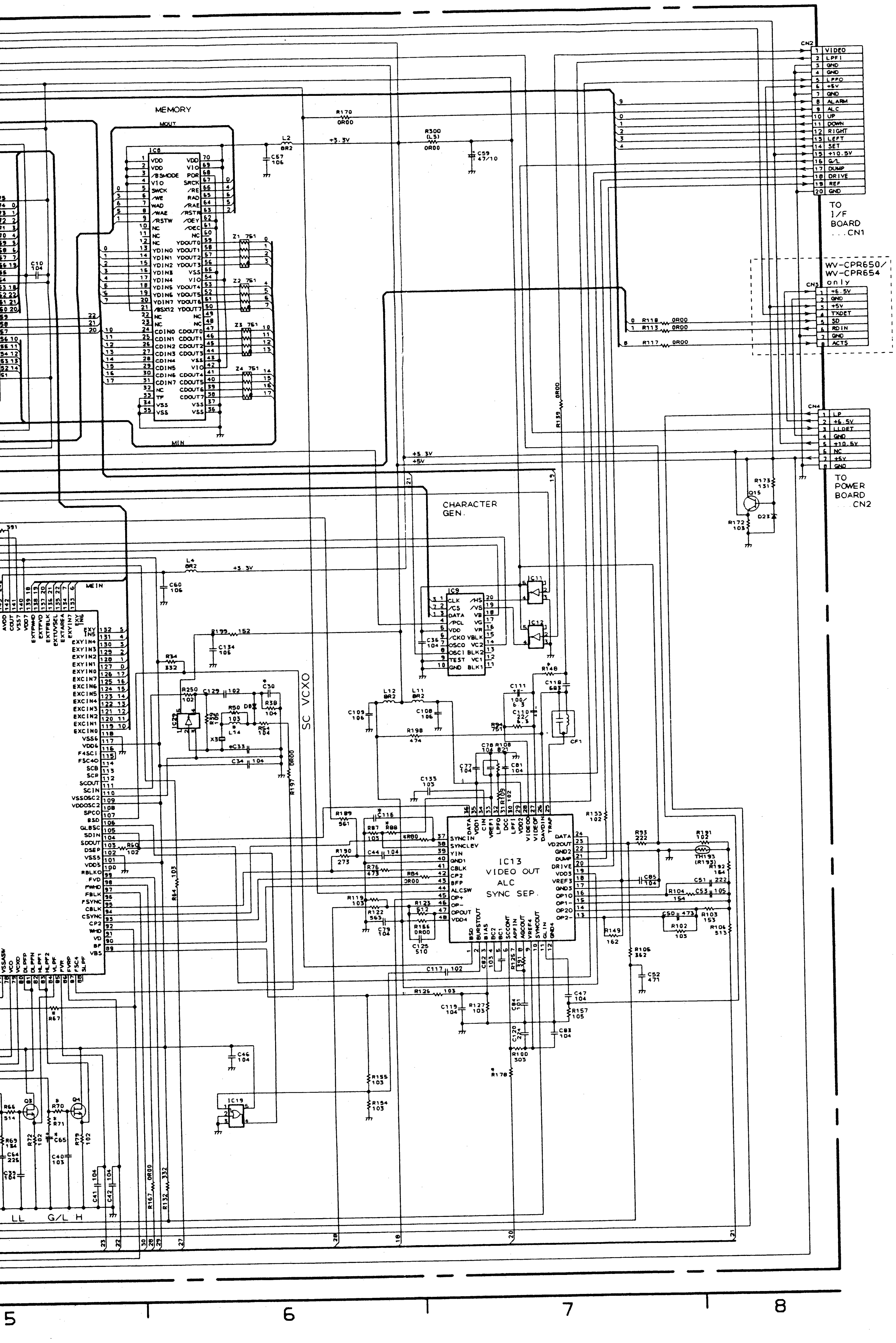
Multiplier
2nd. Sig
1st. Sigi

<Example>

For Resistor:

330 → 33 x 10^0 =
561 → 56 x 10^1 = 5
123 → 12 x 10^3 = 1
0R00 = 0 Ω

IN BOARD


MEMORY
IC8
CN2
VIDEO
LPF1
GND
LPFO
+5V
ALARM
ALC
UP
DOWN
RIGHT
LEFT
SET
+10.5V
G/L
DUMP
DRIVE
REF
TO I/F BOARD ...CN1
WV-CPR650/ WV-CPR654 only
CN3
+6.5V
+5V
TXDET
SD
RDIN
ACTS
CN4
LP
NC
TO POWER BOARD ...CN2
CHARACTER GEN.
IC9
IC11
IC12
SC VCXO
IC29
IC13
VIDEO OUT
ALC
SYNC SEP.
IC19
+5.3V
+5V
G/L
H
LL
5
6
7
8

<Index>

MAIN BOARD

IC1	D3
IC2	C3
IC3	C3
IC4	B3
IC6	D5
IC7	B5
IC8	E6
IC9	C7
IC11	C7
IC12	C7
IC13	B7
IC15	B2
IC17	C3
IC18	C3
IC19	A6
IC20	A3
IC21	A3
IC22	A4
IC23	C1
IC24	C2
IC25	C2
IC26	E1
IC27	A4
IC29	C6
Q2	A5
Q3	A5
Q4	A5
Q13	D2
Q14	D2
Q15	C8
Q17	D2
Q18	D2
D3	A4
D5	A4
D6	A4
D8	C6
D9	C4
D17	D2
D18	D1
D20	D2
D21	D2
D22	D2
D23	C8

Note: The value indicated in the schematic diagram should be read as follows:

□ □ □
- Multiplier (0 - 5)
- 2nd. Significant Digit (0 - 9)
- 1st. Significant Digit (1 - 9)

<Example>

For Resistor:

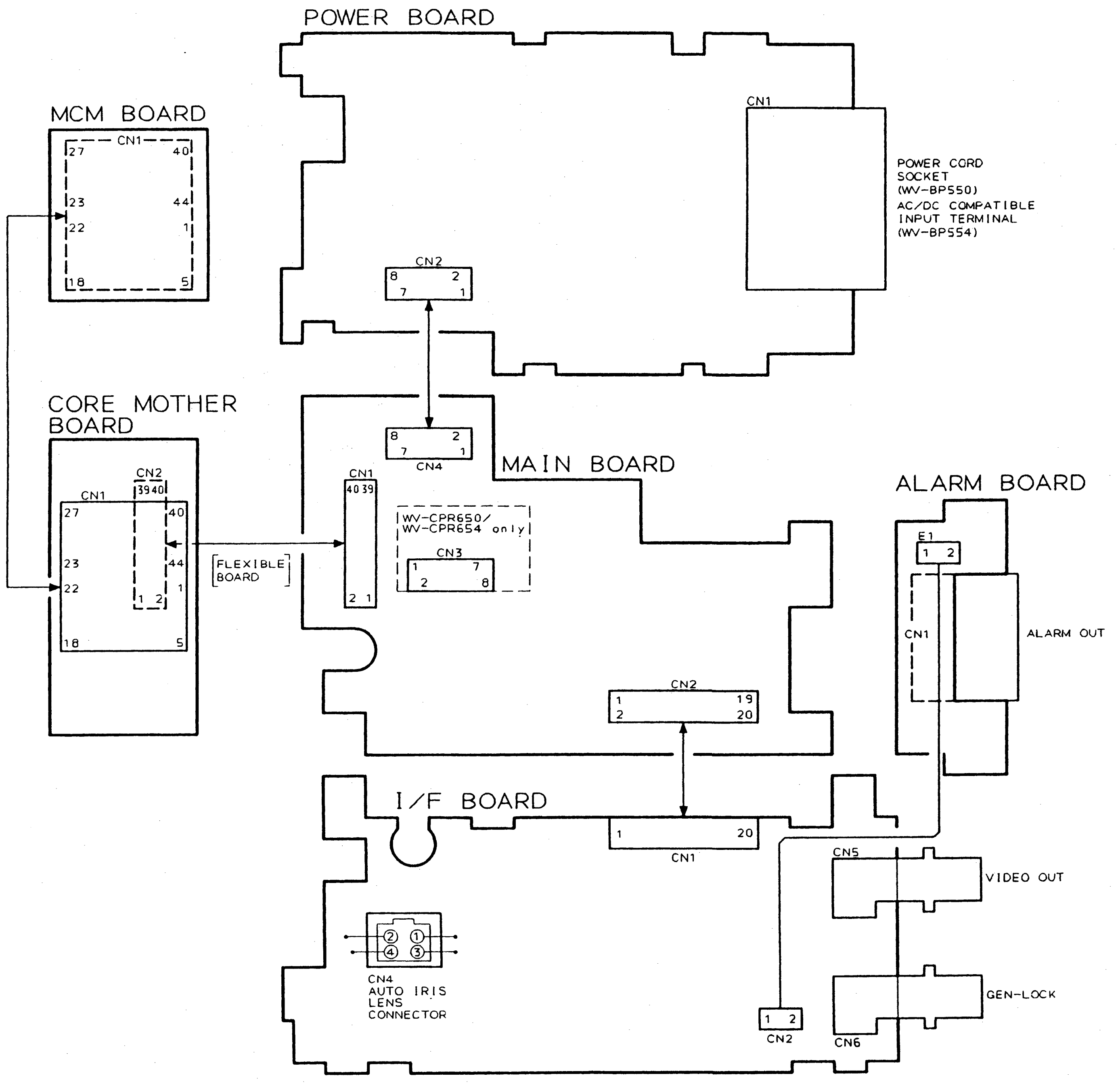
330 → 33 x 10^0 = 33 Ω
561 → 56 x 10^1 = 560 Ω
123 → 12 x 10^3 = 12k Ω
0R00 = 0 Ω

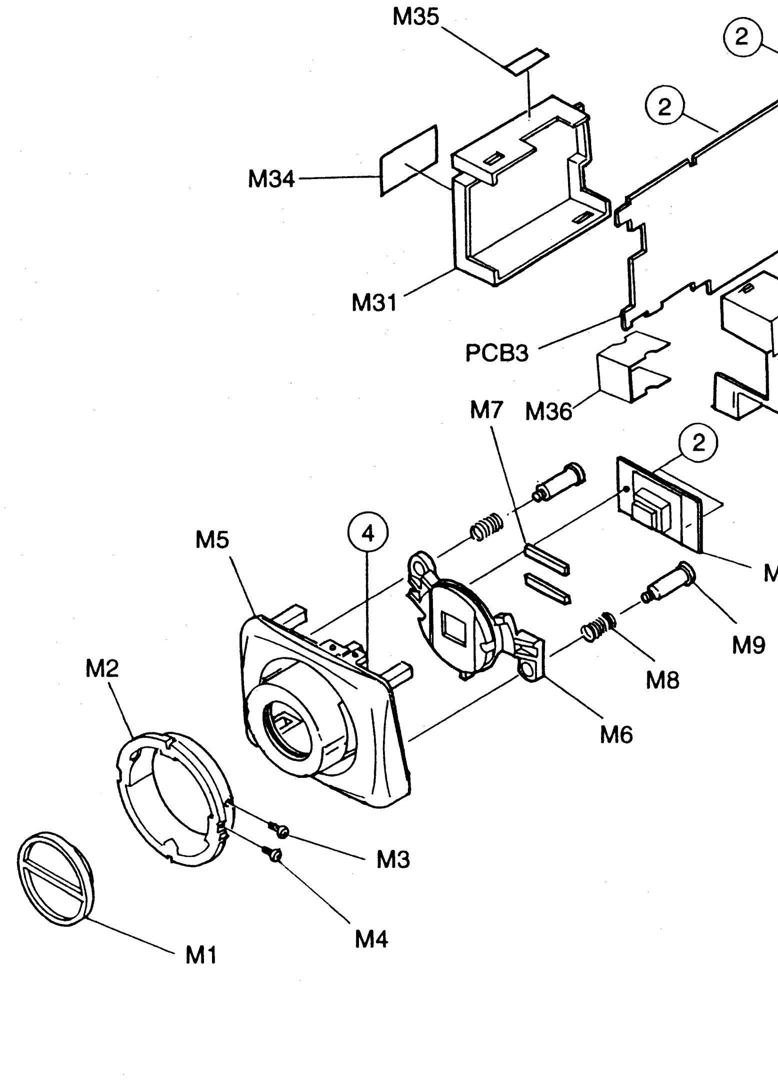
For Capacitor:

820 → 82 x 10^0 = 82 pF
102 → 10 x 10^2 = 1000 pF = 0.001 μF
104 → 10 x 10^4 = 100000 pF = 0.1 μF

The suffix attached to capacitance indicates a type of capacitor.

WIRING DIAGRAM


POWER BOARD
CN1
POWER CORD SOCKET (WV-BP550)
AC/DC COMPATIBLE INPUT TERMINAL (WV-BP554)
CN2
8 2
7 1
MCM BOARD
CN1
27 40
23 44
22 1
18 5
CORE MOTHER BOARD
CN2
39 40
CN1
27 40
23 44
22 1
18 5
1 2
FLEXIBLE BOARD
CN4
8 2
7 1
MAIN BOARD
CN1
40 39
2 1
WV-CPR650/
WV-CPR654 only
CN3
1 7
2 8
CN2
1 19
2 20
ALARM BOARD
E1
1 2
CN1
ALARM OUT
I/F BOARD
1 20
CN1
CN5
VIDEO OUT
② ①
④ ③
CN4
AUTO IRIS LENS CONNECTOR
1 2
CN2
CN6
GEN-LOCK


M35
②
②
M34
M31
PCB3
M36
M7
②
M5
④
M9
M8
M6
M2
M3
M4
M1

ATIBLE
INAL

BOARD

ALARM OUT

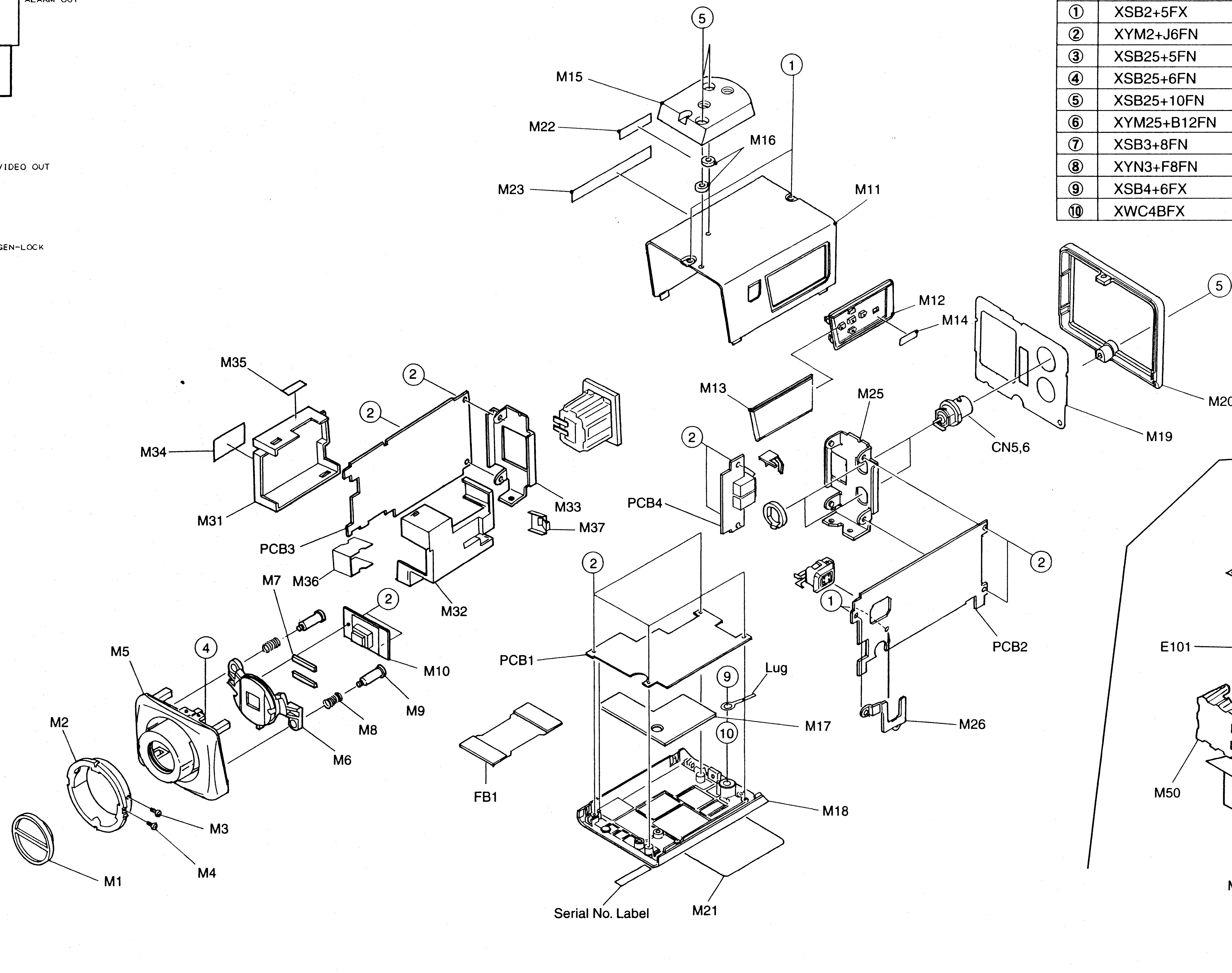
IDEO OUT

EN-LOCK

EXPLODED VIEW FOR WV-BP550 / B,G

○Number's show Screws

No.	Screws
①	XSB2+5FX
②	XYM2+J6FN
③	XSB25+5FN
④	XSB25+6FN
⑤	XSB25+10FN
⑥	XYM25+B12FN
⑦	XSB3+8FN
⑧	XYN3+F8FN
⑨	XSB4+6FX
⑩	XWC4BFX

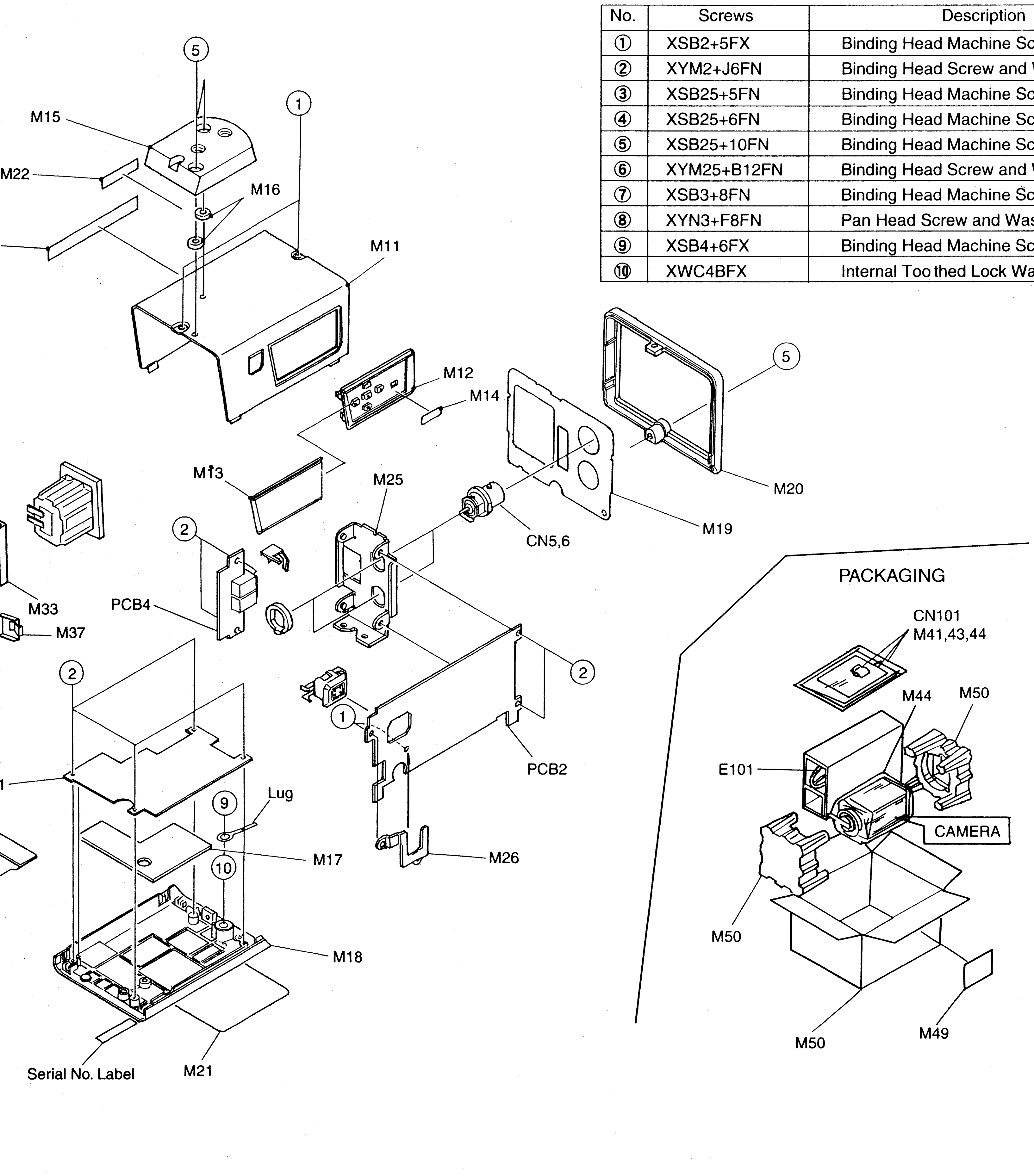


⑤
M15
①
M22
M16
M23
M11
M12
M14
⑤
M35
②
②
M13
M25
M20
M34
②
CN5,6
M19
M31
M33
PCB4
M37
PCB3
②
②
M7
M36
M32
②
①
M10
PCB2
E101
M5
④
PCB1
⑨
Lug
M9
M2
M8
M17
M26
M6
⑩
FB1
M50
M3
M18
M4
M1
Serial No. Label
M21

EXPLODED VIEW FOR WV-BP550 / B,G

○Number's show Screws and Washers.

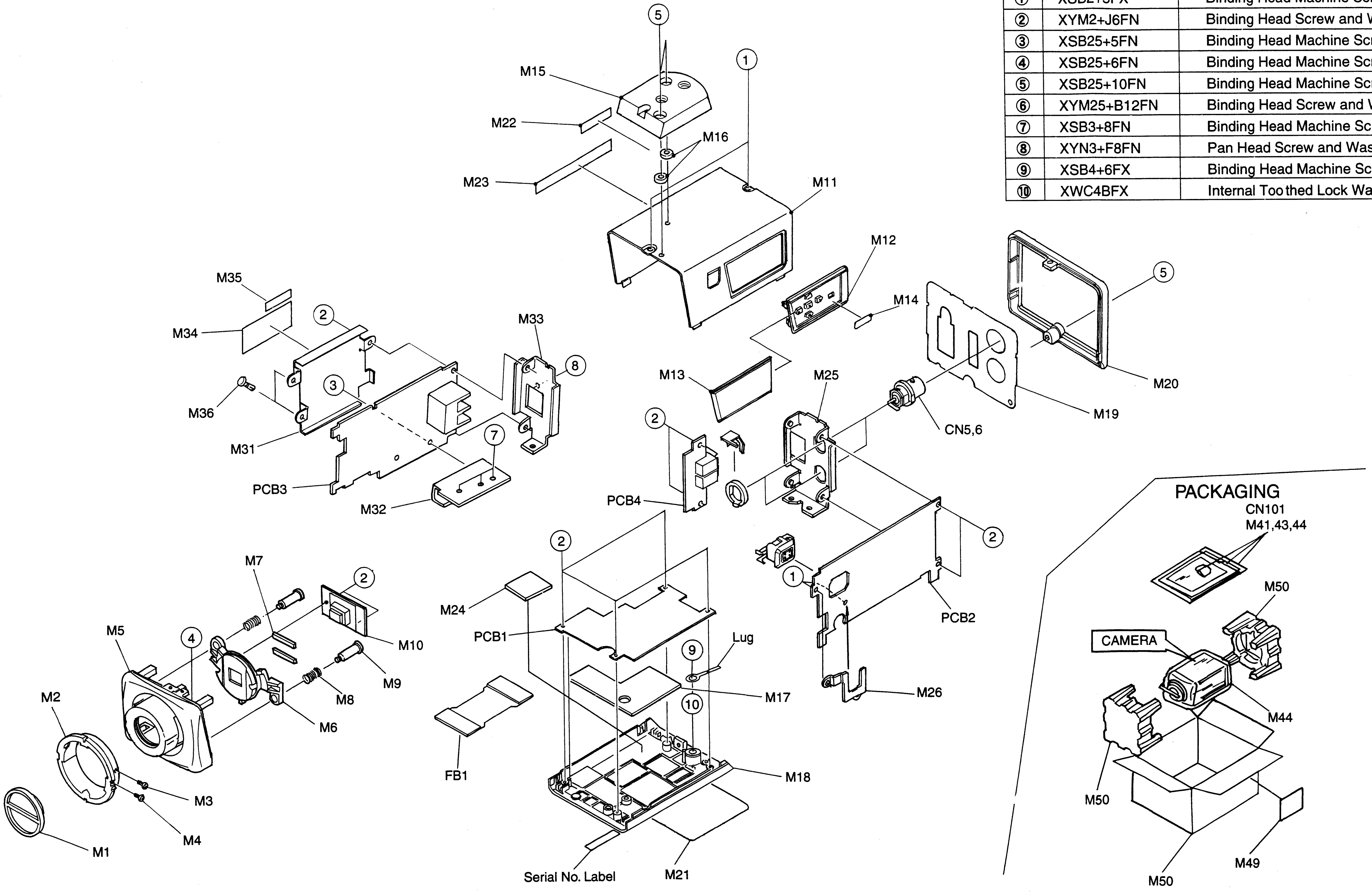
No.	Screws	Description
①	XSB2+5FX	Binding Head Machine Screws
②	XYM2+J6FN	Binding Head Screw and Washer Assy
③	XSB25+5FN	Binding Head Machine Screws
④	XSB25+6FN	Binding Head Machine Screws
⑤	XSB25+10FN	Binding Head Machine Screws
⑥	XYM25+B12FN	Binding Head Screw and Washer Assy
⑦	XSB3+8FN	Binding Head Machine Screws
⑧	XYN3+F8FN	Pan Head Screw and Washer Assy
⑨	XSB4+6FX	Binding Head Machine Screws
⑩	XWC4BFX	Internal Too thed Lock Washers


⑤
M15
①
M22
M16
M11
M12
M14
⑤
M13
M25
M20
②
CN5,6
M19
M33
PCB4
M37
②
②
①
PCB2
⑨
Lug
M17
⑩
M26
M18
Serial No. Label
M21
PACKAGING
CN101
M41,43,44
M44
M50
E101
CAMERA
M50
M50
M49

EXPLODED VIEW FOR WV-BP554E

○Number's show Screws and Washers.

No.	Screws	Description
①	XSB2+5FX	Binding Head Machine Screws
②	XYM2+J6FN	Binding Head Screw and Washer Assy
③	XSB25+5FN	Binding Head Machine Screws
④	XSB25+6FN	Binding Head Machine Screws
⑤	XSB25+10FN	Binding Head Machine Screws
⑥	XYM25+B12FN	Binding Head Screw and Washer Assy
⑦	XSB3+8FN	Binding Head Machine Screws
⑧	XYN3+F8FN	Pan Head Screw and Washer Assy
⑨	XSB4+6FX	Binding Head Machine Screws
⑩	XWC4BFX	Internal Toothed Lock Washers



⑤
①
M15
M22
M16
M23
M11
M12
M14
⑤
M35
M34
②
M33
⑧
M36
③
M31
⑦
PCB3
M32
M13
②
M25
M20
M19
CN5,6
PCB4
②
②
M7
②
M5
④
M10
M9
M8
M6
M2
M3
M4
M1
M24
PCB1
⑨
Lug
⑩
M17
FB1
M18
Serial No. Label
M21
①
PCB2
M26
PACKAGING
CN101
M41,43,44
M50
CAMERA
M44
M50
M49
M50

REPLACEMENT PARTS LIST

Important Notice

1. Components identified by " ⚠ " mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
2. RTL : Retention Time Limited (No longer available after discontinuing product).

MISCELLANEOUS

REF.NO.	PART NO.	DESCRIPTION
FB1	YWVCP15JKZ1A	Flexible Board
M1	YWBC-2B	Body Cap
M2	YWV3FA0178A3	Adjusting Ring
M3	YWV1EA0128A4	Special Screw
M4	YWV1EB0127A4	FB Lock Screw
M5	YWV5BA1017A2	Front Escutcheon
M6	YWV6FA1022A3	Bracket
M7	YWV2FA1133A4	Cushion
M8	YWV4JA1082A4	Spring
M9	YWV2JA1026A4	Brace
M10	YWV0EA1168AN	Head Optical Assy
M11 ⚠	YWV5EA2256A2	Cover
M12	YWV9AA2418A3	Side Switch Assy
M13 ⚠	YWV5WG2319A3	Side Panel for WV-BP550/B,G
	YWV5WH2319A3	Side Panel for WV-BP554E
M14	YWV7SA3618A4	Dip Switch Label
M15	YWV2TF0333A3	Mounting Adaptor
M16	YWV1KA0128A4	Washer
M17 ⚠	YWV2FA1135A4	Cushion
M18 ⚠	YWV2KB1163B2	Chassis
M19 ⚠	YWV5WC2320A4	Rear Panel for WV-BP550/B,G
	YWV5WA2327A4	Rear Panel for WV-BP554E
M20	YWV5BA1018A3	Rear Escutcheon
M21 ⚠	YWV7QA4789A4	Main Label for WV-BP550/B
	YWV7QA4791A4	Main Label for WV-BP550/G
	YWV7QA4793A4	Main Label for WV-BP554E
M22	YWV5DA1111A4	Ornament
M23 ⚠	YWV7SA3681A4	Side Label
M24 ⚠	YWV2FA1120A4	Cushion for WV-BP554E
M27	YFV2NA0084A4	Spacer
M28	YWV2PA0615A4	Insulator

MAIN BOARD

REF.NO.	PART NO.	DESCRIPTION	
PCB1 (RTL)	YWVBP55EKC1A	Printed Circuit Board Assy	
IC1	YWT93C4F9043	IC	
IC2	MN13821	IC	
IC3	YWBR9040FT1	IC	
IC4	MN67353	IC	
IC6	YWUPD97047GC	IC	
IC7	MN673521	IC	
IC8	YWZA4035H	IC	
IC9	YWD6462GS905	IC	
IC11,12	YWTC7S04F	IC	
IC13	AN9DE01F	IC	
IC15	YWTDA8766GCS	IC	
IC17-19	YWTC7S32F	IC	
IC20	YWTC7S04FUL	IC	
IC21,22	YWTC7S08FUL	IC	
IC23	YWTC7S04FUL	IC	
IC24	YWTC7SH00FUL	IC	
IC25	YWTC7W74F	IC	
IC26	XC62AP4702MR	IC	
IC27,29	YWTC7SU04FUL	IC	
Q2,3	2SK106945	FET	
Q4	2SK10694TL	FET	
Q13	2SD1820-QRS	Transistor	
Q14	2SB1219-QRS	Transistor	
Q15	2SD874A-RS	Transistor	
Q17	2SC4617	Transistor	
Q18	2SA1774	Transistor	
D3	YWHVU350TRF	Diode	
D5,6	YWHVU359TRF	Diode	
D8	YWHVU359TRF	Diode	
D9	YWDA121	Diode	
D17	YWDA227TL	Diode	
D18	MA8150	Diode	
D20-22	MA726	Diode	
D23	MA8039	Diode	
TH193	L311F202J402	Thermistor	
R1-3	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R5	ERJ3GEYJ105	Carbon	1M ohms 1/16W
R8	ERJ2GEJ103	Carbon	10K ohms 1/16W
R9	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R10	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R12	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R13	ERJ2GEJ103	Carbon	10K ohms 1/16W
R14	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R15,17	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R19	ERJ3GEYJ621	Carbon	620 ohms 1/16W
R22	ERJ3GEYJ304	Carbon	300K ohms 1/16W
R23	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R25	ERJ2GE0R00	Carbon	0 ohms 1/10W
R26	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R29	ERJ2GEJ105	Carbon	1M ohms 1/16W
R32	ERJ2GEJ104	Carbon	100K ohms 1/16W
R33	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R34	ERJ3GEYJ332	Carbon	3.3K ohms 1/16W
R36	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R37	ERJ3GEYJ105	Carbon	1M ohms 1/16W
R38	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R39	ERJ3GEYJ105	Carbon	1M ohms 1/16W
R42	ERJ2GEJ621	Carbon	620 ohms 1/16W
R43,44	ERJ2GEJ103	Carbon	10K ohms 1/16W
R47	ERJ3GEYJ242	Carbon	2.4K ohms 1/16W
R50	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R53	ERJ3GEY0R00	Carbon	0 ohms1/16W
R54	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R55	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R57	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R60	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R64	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R65	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R66	ERJ3GEYJ514	Carbon	510K ohms 1/16W
R67	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R68	ERJ3GEYJ474	Carbon	470K ohms 1/16W
R69	ERJ3GEYJ134	Carbon	130K ohms 1/16W
R70	ERJ3GEYJ183	Carbon	18K ohms 1/16W
R71	ERJ3GEYJ512	Carbon	5.1K ohms 1/16W
R72	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R76	ERJ3GEYJ473	Carbon	47K ohms 1/16W
R79	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R80	ERJ3GEYJ122	Carbon	1.2K ohms 1/16W
R84	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R87	ERJ3RHD103V	Metal	10K ohms 1/16W
R88	ERJ3RHD202V	Metal	2K ohms 1/16W
R93	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R94	ERJ3GEYJ751	Carbon	750 ohms 1/16W
R100	ERJ3GEYJ303	Carbon	30K ohms 1/16W
R102	ERJ2GEJ103	Carbon	10K ohms 1/16W
R103	ERJ2GEJ153	Carbon	15K ohms 1/16W
R104	ERJ3GEYJ154	Carbon	150K ohms 1/16W
R105	ERJ3GEYJ362	Carbon	3.6K ohms 1/16W
R106	ERJ3GEYJ513	Carbon	51K ohms 1/16W
R108	ERJ3RHD821V	Metal	820 ohms 1/16W
R109	YWR0510P102D	Metal	1K ohms 1/16W
R111	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R113,117	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R118	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R119	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R122	ERJ3GEYJ563	Carbon	56K ohms 1/16W
R123	ERJ3GEYJ512	Carbon	5.1K ohms 1/16W
R125	ERJ3GEYJ391	Carbon	390 ohms 1/16W
R126	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R127	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R132	ERJ3GEYJ332	Carbon	3.3K ohms 1/16W
R133	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R136	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R139	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R148	ERJ14YJ750	Carbon	0 ohms 1/16W
R149	ERJ3GEYJ162	Carbon	1.6K ohms 1/16W
R150	ERJ3GEYJ201	Carbon	200 ohms 1/16W
R151	ERJ2GEJ391	Carbon	0 ohms 1/16W
R153-155	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R156	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R157	ERJ3GEYJ105	Carbon	1M ohms 1/16W
R158	ERJ6GEYJ161	Carbon	0 ohms 1/16W
R159	ERJ6GEYJ242	Carbon	0 ohms 1/16W
R161	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R162	ERJ6GEYJ120	Carbon	12 ohms 1/16W
R163	ERJ3RHD203V	Metal	20K ohms 1/16W
R166	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R167	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R170	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R171	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R172	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R173	ERJ3GEYJ131	Carbon	130 ohms 1/16W
R178	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R185	ERJ3GEYJ302	Carbon	3K ohms 1/16W
R186	ERJ3GEYJ271	Carbon	270 ohms 1/16W
R188	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R189	ERJ3GEYJ561	Carbon	560 ohms 1/16W
R190	ERJ3GEYJ273	Carbon	27K ohms 1/16W
R191	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R192	ERJ3GEYJ164	Carbon	160K ohms 1/16W
R194	ERJ14YJ101	Carbon	100 ohms 1/16W
R195	ERJ3GEYJ202	Carbon	2K ohms 1/16W
R196	ERJ3GEYJ152	Carbon	1.5K ohms 1/16W
R197	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R198	ERJ3GEYJ474	Carbon	470K ohms 1/16W
R199	ERJ2GEJ152	Carbon	1.5K ohms 1/16W
R250	ERJ2GEJ102	Carbon	1K ohms 1/16W
R300	ERJ8GCS0R00	Carbon	0 ohms 1/16W
Z1-4	EXBV8V751JV	Block Resistor	
C1-3	YW5F104Z2VB	Ceramic	0.1 µF
C7-11	YW5F104Z2VB	Ceramic	0.1 µF
C13-17	YW5F104Z2VB	Ceramic	0.1 µF
C19,21	YW5CH240J5VB	Ceramic	24 pF 50V
C24	YW5F104Z2VB	Ceramic	0.1 µF
C26	YW5CH241J5VB	Ceramic	240 pF
C28	YW5X103K5VB	Ceramic	0.01 µF
C30	YW5CH240J5VB	Ceramic	24 pF 50V
C32	YW5CH241J5VB	Ceramic	240 pF
C33	YW5CH270J5VB	Ceramic	27 pF
C34,36	YW5F104Z2VB	Ceramic	0.1 µF
C37,39	YW5F104Z2VB	Ceramic	0.1 µF
C40	YW5X103K5VB	Ceramic	0.01 µF

REF.NO.	PART NO.	DESCRIPTION
C41,42	YW5F104Z2VB	Ceramic 0.1 µF
C44	YW5X104K1VB	Ceramic 0.1 µF
C46	YW5F104Z2VB	Ceramic 0.1 µF
C47	YW5X104K1VB	Ceramic 0.1 µF
C50	YW5F473Z5VB	Ceramic 0.047 µF
C51	YW5X222K5VB	Ceramic 2200 pF
C52	YW5CH471J5VB	Ceramic 470 pF
C53	YW400105FZ	Ceramic 1 µF
C56	ECST0JY335	Tantalum 3.3 µF 6.3V
C57	YW32Y106F16T	Ceramic 10 µF
C59	ECST1AC476ZR	Electrolytic 47 µF 10V
C60	YW32Y106F16T	Ceramic 10 µF
C61	YW426105FZT	Ceramic 1 µF
C63	YW426105XK	Ceramic 1 µF
C64	YW426225FZT	Ceramic 2.2 µF
C65	TAJA105M016	Tantalum 1 µF 16V
C70,72	YW5F104Z2VB	Ceramic 0.1 µF
C74,75	YW5F104Z2VB	Ceramic 0.1 µF
C77-79	YW5F104Z2VB	Ceramic 0.1 µF
C81	YW5X104K1VB	Ceramic 0.1 µF
C82	YW5X103K5VB	Ceramic 0.01 µF
C83	YW5F104Z2VB	Ceramic 0.1 µF
C84	YW5CH101J5VB	Ceramic 100 pF
C85	YW5F104Z2VB	Ceramic 0.1 µF
C86	YW32Y106F16T	Ceramic 10 µF
C88	YW32Y475F25T	Ceramic 4.7 µF
C89	YW426105XK	Ceramic 1 µF
C90	ECST1EY105ZR	Electrolytic 1 µF 25V
C92	YW426105FZT	Ceramic
C94,95	YW400105FZ	Ceramic
C97	ECST1EX475ZR	Tantalum 4.7 µF 25V
C108,109	YW32Y106F16T	Ceramic 10 µF
C110	EEVHB0J220R	Electrolytic 22 µF 6.3V
C111	EEVHB0J101P	Electrolytic 100 µF 6.3V
C112	YW5F104Z2VB	Ceramic 0.1 µF
C114	ECST1AY106ZR	Tantalum 10 µF 10V
C115	YW5X104K1VB	Ceramic 0.1 µF
C116	YW5CH101J5VB	Ceramic 100 pF
C117	YW5CH102J5VB	Ceramic 1000 pF
C118	YW5F683Z2VB	Ceramic 0.068 µF
C119	YW5F104Z2VB	Ceramic 0.1 µF
C120	YW5F224Z1VB	Ceramic 0.22 µF
C121	YW400475FZT	Ceramic 4.7 µF
C123	YW400105FZ	Ceramic 1 µF
C124	YW400105XKT	Ceramic 1 µF
C125	YW5CH510J5VB	Ceramic 51 pF
C126	YW5CH200J5VB	Ceramic 20 pF
C128,129	YW5CH102J5VB	Ceramic 1000 pF
C130,131	YW5F105Z1VB	Ceramic 1 µF
C132	YW400225FZT	Ceramic 2.2 µF
C133	YW5X103K5VB	Ceramic 0.01 µF
C134	YW5F105Z1VB	Ceramic 1 µF
L1	EIC4EJ011E	Coil
L2,4	ELJFC8R2MF	Coil 8.2 µH
L10-12	ELJFC8R2MF	Coil 8.2 µH
L14	ELJFC4R7JF	Coil 4.7 µH
L15	ELJFC2R2JF	Coil 2.2 µH
X1	PBRC12R288BR	Crystal Oscillator
X2	YW32C228R375	Crystal Oscillator
X3	YW32C217R734	Crystal Oscillator
CF1	YWNL4532S4R4	Filter
CN1	YW41793970	40-pin Connector
CN2	YWTKCF20PG2	20-pin Connector
CN4	YWTKCF08PG2	8-pin Connector

I / F BOARD

REF.NO.	PART NO.	DESCRIPTION
PCB2 (RTL)	YWVCP65JKY3A	Printed Circuit Board Assy
Q11	2SC4617	Transistor
Q12	2SD1819-QRS	Transistor
Q13,14	2SB1218A-QR	Transistor
Q15	2SA1774	Transistor
Q16	2SC4617	Transistor
D4	YWSLC22VR	LED
R1	ERJ3GEY0R00	Carbon 0 ohms 1/16W
R48	ERJ3GEYJ104	Carbon 100K ohms 1/16W
R49,50	ERJ3GEYJ432	Carbon 4.3K ohms 1/16W
R51	ERJ3GEYJ104	Carbon 100K ohms 1/16W
R52,53	ERJ3GEYJ222	Carbon 2.2K ohms 1/16W
R55-57	ERJ3GEYJ204	Carbon 200K ohms 1/16W
R58	ERJ3GEYJ561	Carbon 560 ohms 1/16W
R59	ERJ3GEYJ332	Carbon 3.3K ohms 1/16W
R60,61	ERJ3GEYJ204	Carbon 200K ohms 1/16W
R62	ERJ3GEYJ103	Carbon 10K ohms 1/16W
R63	ERJ3GEYJ104	Carbon 100K ohms 1/16W
R64	ERJ3GEYJ512	Carbon 5.1K ohms 1/16W
R68	ERJ3GEYJ750	Carbon 75 ohms 1/16W
R69	ERJ3GEY0R00	Carbon 0 ohms 1/16W
R251	ERJ14YJ100	Carbon 10 ohms 1/4W
C1	YW5F104Z2VB	Ceramic 0.1 µF
C33,34	YW400105FZ	Ceramic 1 µF
L1	ELJFCR68MF	Coil 0.68 µH
L2-4	ELJFC8R2MF	Coil 8.2 µH
SW1-5	YWSKQDPB	Push Switch
SW6	YWD1S02GE	Dip Switch
CN1	YWTKCF20PM2	20-pin Connector
CN2	S2BZRSM3ATF	2-pin Connector
CN4	YWM1963	4-pin ALC Connector
CN5,6	YWP2367	BNC Connector
M25	YWV2KA1171A4	Mounting Chassis for Connector
M26	YWV2SA4446A4	Mounting Angle

POWER BOARD for WV-BP550/B,G

REF.NO.	PART NO.	DESCRIPTION	
PCB3 (RTL)	YWVC450EKY4A	Printed Circuit Board Assy	
IC1	MIP160	IC	
IC2	YWTA76431S	IC	
Q1	YWPC123FY2	IC	
Q2	2SC2412KT96	Transistor	
Q3	YWPC123FY2	Photo Coupler	
D1 ⚠	YWDF06S	Diode	
D2	YWP6KE180A	Diode	
D3	YWERA34-10	Diode	
D4,11	YWSC2012	Diode	
D12	YWSC2012	Diode	
D14	YWSC80206L	Diode	
VS1	YWJ07N471KP	ZNR	
R1,2	ERJ14YJ913	Carbon	91K ohms 1/4W
R3	ERJ6GEYJ363	Carbon	36K ohms 1/10W
R4	ERJ6GEYJ472	Carbon	4.7K ohms 1/16W
R5	ERJ6GEYJ392	Carbon	3.9K ohms 1/16W
R6,7	ERJ6GEYJ470	Carbon	47 ohms 1/10W
R8	ERJ6GEYJ100	Carbon	10 ohms 1/10W
R9,10	ERJ6GEYJ470	Carbon	47 ohms 1/10W
R11,12	ERJ6GEYJ103	Carbon	10K ohms 1/10W
R13	ERJ6GEYJ470	Carbon	47 ohms 1/10W
R14	ERJ6GEYJ471	Carbon	470 ohms 1/10W
R15	ERJ6GEYJ102	Carbon	1K ohms 1/10W
R16	ERA6YED682V	Metal	6.8K ohms 1/16W
R17	ERJ6GEYJ391	Carbon	390 ohms 1/10W
R18	ERA6YED682V	Metal	6.8K ohms 1/16W
R19	ERJ6GEYJ103	Carbon	10K ohms 1/10W
R20	ERJ6GEYJ330	Carbon	33 ohms 1/10W
C1 ⚠	YWX75M683VS1	Plastic	0.068 µF
C2	RJ3400V100M	Electrolytic	10 µF
C4,5	YF400104FZT	Ceramic	0.1 µF
C6	YWRJJ1E390E3	Electrolytic	39 µF 25V
C7	YW400105FZ	Ceramic	1 µF
C8,9	ECKDRS332	Ceramic	3300 pF
C11	YWRJJ1C820E4	Electrolytic	82 µF 16V
C12	YWRJJ1C121F3	Electrolytic	120 µF 16V
C13	YWRJJ1A561H4	Electrolytic	560 µF 10V
C14	YWRJJ1A121E4	Electrolytic	102 µF 10V
C16	YF400104FZT	Ceramic	0.1 µF
C17-19 ⚠	YW12FY222ML7	Ceramic	2200 pF
C20	ECKDRS332	Ceramic	3300 pF
C21	YWBM6681KH	Ceramic	680 pF
L1	YWLCCP450E	Coil	
L2	YWSL675100	Coil	
T1 ⚠	YWPTCP450E	Power Transformer	
CN1	YWSC8R	Connector	
CN2	YWTKCF08PE3	Connector	
F1 ⚠	XBA2C05ET0A	Current Fuse	0.5A 250V
E1,2	S-N5057	Fuse Holder	
E3	YW840522	Insulator	
E4	YW851040	Insulator	
M31	YWV5KA2151A3	Case	
M32	YWV6EA1032A3	Lid	
M33	YWV2KA1172A4	Mounting Chassis for Connector	
M34	YFV7MA0412A4	Fuse Change Label	
M35	YWV7MA0451A4	Fuse Rated Label	
M36	YWV2PA1122A4	Insulator Paper for Power Transformer	
M37	YWV7DA1069A4	Hiet Sink for IPD	

POWER BOARD for WV-BP554E

REF.NO.	PART NO.	DESCRIPTION	
PCB3 (RTL)	YWVC454EKY4A	Printed Circuit Board Assy	
IC1	UC2843NU	IC	
IC2	YWTA76431S	IC	
Q1	2SC2412KT96	Transistor	
Q2	2SK252001MR	FET	
Q3	2SA1037-QRS	Transistor	
Q4,5	YWPC817X7	Photo Coupler	
VS1-3	ERZV07D680	ZNR	
D1	YWD10SC6M	Diode	
D3	YWD10SC6MR	Diode	
D5	YWUDZ11B	Diode	
D6	YWSC2012	Diode	
D7	DAP202KT7	Diode	
D11,12	YWSC2012	Diode	
D14	YWSC80206L	Diode	
R1,2	ERJ14YJ112	Carbon	1.1K ohms 1/10W
R3	ERJ6GEYJ152	Carbon	1.5K ohms 1/10W
R4	ERJ6GEYJ103	Carbon	10K ohms 1/10W
R5	ERJ6GEYJ220	Carbon	22 ohms 1/10W
R6	ERJ6GEYJ104	Carbon	100K ohms 1/10W
R7	YWR1220P102D	Metal	1K ohms
R8	ERJ6GEYJ103	Carbon	10K ohms 1/10W
R9	ERJ6GEYJ122	Carbon	1.2K ohms 1/10W
R11	ERJ14RQJR22U	Carbon	0.22 ohms 1/4W
R12	ERJ14YJ101	Carbon	100 ohms 1/10W
R13	ERJ6GEYJ470	Carbon	47 ohms 1/10W
R14	ERJ6GEYJ471	Carbon	470 ohms 1/10W
R21,22	ERJ6GEYJ103	Carbon	10K ohms 1/10W
R23	ERJ6GEYJ470	Carbon	47 ohms 1/10W
R24	ERJ6GEYJ471	Carbon	470 ohms 1/10W
R25	ERJ6GEYJ152	Carbon	1.5K ohms 1/10W
R26	ERA6YED682V	Metal	6.8K ohms 1/10W
R27	ERJ6GEYJ391	Carbon	390 ohms 1/10W
R28	ERA6YED682V	Metal	6.8K ohms 1/10W
R29	ERJ6GEYJ103	Carbon	10K ohms 1/10W
C1	ECQV1334JM	Plastic	0.33 µF
C2	ECQV1104JM	Plastic	0.1 µF
C3,4	ECQM1103KZ	Ceramic	0.01 µF
C5	YWRJ350V471	Electrolytic	470 µF 350V
C6	YW400105FZ	Ceramic	1 µF

REF.NO.	PART NO.	DESCRIPTION
C7	YF400103XKT	Ceramic 0.01 µF
C8	YWRJJ1C560E3	Electrolytic 56 µF 16V
C9	YF400471CHJT	Ceramic 470 pF
C10	YF400103XKT	Ceramic 0.01 µF
C11	YWRJJ1C121F3	Electrolytic 120 µF 16V
C12	YF400224FZT	Ceramic 0.22 µF
C13	YWBM6681KH	Ceramic 680 pF
C14	ECQM1103KZ	Ceramic 0.01 µF
C15	YF400104FZT	Ceramic 0.1 µF
C21	YWRJJ1C820E4	Electrolytic 82 µF 16V
C23	YWRJJ1C121F3	Electrolytic 120 µF 16V
C24	YWRJJ1A561H4	Electrolytic 560 µF 10V
C25	YWRJJ1A121E4	Electrolytic 120 µF 10V
C26,27	YF400103XKT	Ceramic 0.01 µF
L1	YWLCCP454P	Coil
L2	YWSL675100	Coil
T1 ⚠	YWPTCP454P	Power Transformer
CN1	YWT6944	Connector
CN2	YWTKCF08PE3	Connector
F1 ⚠	XBA2C31ET0A	Current Fuse 3.1A 125V
E1,2	S-N5057	Fuse Holder
E3	YW840522	Insulator
M31	YWV2PA1121A4	Insulator Cover
M32	YWV7DA1068B4	Heat Sink
M33	YWV2KA1173A4	Mounting Angle for Terminal Board
M34	YFV7MA0412A4	Fuse Change Label
M35	YWV7MA0455A4	Fuse Rated Label
M36	YW0920	Tact

REF.NO.	PART NO.	DESCRIPTION
ALARM BOARD		
PCB4 (RTL)	YWVCP65JKY5A	Printed Circuit Board Assy
CN1	YWML400A102P	2-pin Connector
E1	YWCP650J1	Wire Assy for I/F Board CN2
ACCESSORY PARTS/PACKAGING PARTS		
E101 ⚠	YWACP45B	AC Power Cord for WV-BP550/B
⚠	YWACP45G	AC Power Cord for WV-BP550/G
CN101	YWM1943A	ALC Lens Connector
M41	YWV8QA4770AN	Operating Instructions
M43	YWT050803	Polyethylene Bag
M44	YWT20X35C03	Polyethylene Bag
M45	YWV7SA3645A4	Caution Label
M49	YWV7SA2037A3	Bar Cord Label
M50	YWV9CA3643AN	Packaging Assy for WV-BP550/B
	YWV9CA3645AN	Packaging Assy for WV-BP550/G
	YWV9CA3647AN	Packaging Assy for WV-BP554E

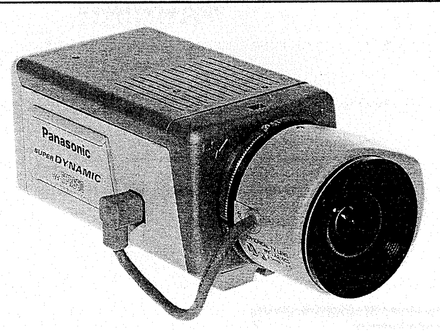
ORDER NO. AVS9710062C8

Service Manual

Coluor CCTV Cameras

WV-CP450/WV-CP454
WV-CP650/WV-CP654

V20573



(Lens: Option)

SPECIFICATIONS

Pick-up Device:	752 (H) x 582 (V) pixels, Interline Transfer CCD	
Scanning Area:	4.9 (H) x 3.7 (V) mm (Equivalent to scanning area of 1/3" pick-up tube)	
Scanning:	625 lines / 50 fields / 25 frames	
Horizontal:	15.625 KHz	
Vertical:	50.00 Hz	
Synchronization:	Internal, Line-locked, External (VS/VBS) or Multiplexed Vertical Drive (VD2) Selectable	
Video Output:	1.0 V[p-p] PAL composite 75 Ω / BNC connector	
Horizontal Resolution:	480 lines	
Signal-to-Noise Ratio:	50 dB (AGC OFF, weight ON)	
Dynamic Range:	40 dB	
Minimum Illumination:	0.9 lx (0.09 footcandle) at F0.75 [Equivalent to 3 lx (0.3 footcandle) at F1.4]	
Gain Control:	Selectable AGC ON or OFF (SET UP MENU)	
White Balance:	Selectable ATW or AWC (SET UP MENU)	
Aperture:	Set Variable (SET UP MENU)	
Electronic Light Control:	Equivalent to continuous variable shutter speed between 1/50 second and 1/10 000 second	
Back Light Compensation:	Selectable Preset On or Off (SET UP MENU)	
Electronic Shutter Speed:	Selectable 1/50 (OFF), 1/120, 1/250, 1/500, 1/1 000, 1/2 000, 1/4 000, 1/10 000 second	
Lens Mount:	Selectable C-mount or CS-mount	
ALC Lens:	Selectable DC or Video	
Ambient Operating Temperature:	-10°C - +50°C (14°F - 122°F)	
Ambient Operating Humidity:	Less than 90%	
Power Source and Power Consumption:	WV-CP450:	220 - 240V AC 50 Hz, 5.3W
	WV-CP454:	24V AC 50 Hz, 5.2W 12V DC, 540 mA
	WV-CP650:	220-240V AC 50 Hz, 5.5W
	WV-CP654:	24V AC 50 Hz, 5.2W 12V DC, 540 mA
Dimensions (without lens):	67 (W) x 55 (H) x 123 (D) mm [2-5/8" (W) x 2-3/16" (H) x 4-13/16" (D)]	
Weights (without lens):	WV-CP450:	0.405 kg (0.89 lbs.) (without power cord)
	WV-CP454:	0.405 kg (0.89 lbs.)
	WV-CP650:	0.41kg (0.9 lbs.) (without power cord)
	WV-CP654:	0.41kg (0.9 lbs.)

Weights and dimensions indicated are approximate.
Specifications are subject to change without notice.

Panasonic

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STANDARD ACCESSORIES

Body Cap	1 pc.
ALC Lens Connector	1 pc.
AC Power Cord (for only WV-CP450 and WV-CP650)	1 pc.

OPTIONAL ACCESSORIES

Lenses : WV-LA2R8C3B, WV-LA4R5C3B, WV-LA9C3B, WV-LA210C3, WV-LA408C3, WV-LA908C3
WV-LZ61/10, WV-LZ62/2, WV-LF4R5C3A, WV-LF9C3A

⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public.
It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN

CAUTION:
TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER SERVICEABLE PARTS INSIDE.
REFER SERVICEING TO QUALIFIED SERVICE PERSONNEL.

This symbol warns the user that uninsuland voltage within the unit may have sufficient magnitude to cause electric shock. Therefore, it is dangerous to make any kind of contact with any inside part of this unit.

This symbol alerts the user that impotant literature concerning the operation and maintenance of this has been included. Therefore, it should be read carefully in order to avoid any problems.

IMPORTANT SAFETY NOTICE

There are special components used in this equipment which are important for safety. These parts are indicated by the "⚠" mark on the schematic diagram and the replacement parts list. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent shock, fire, or other hazards.
Do not modify the original design without permission of manufacture.

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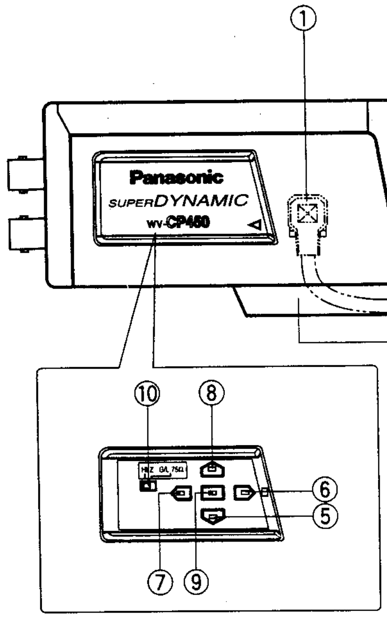
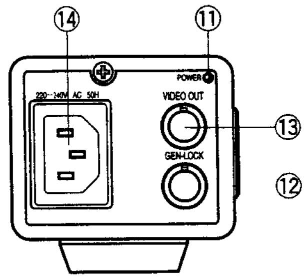
MAJOR OPERATING CONTROLS AND THEIR FUNCTIONS



Slide the panel to the left until it locks.

<WV-CP450>



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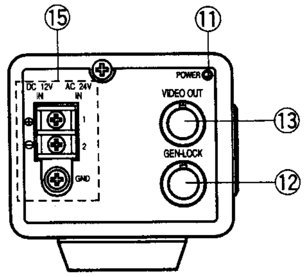


① **Auto Iris Lens Connector**
This connector is used to connect with the auto iris lens by a 4-pin male connector that is supplied as a standard accessory.

② **Back Focal Adjusting Ring**
This ring is used to adjust the back focal length or picture focus. Rotate this ring clockwise for a C-mount lens or counterclockwise for a CS-mount lens.

③ **Lens (Option)**

④ **Camera Mounting Screw Hole**
This hole is used to mount the camera onto a mounting bracket.

⑤ **Down Button (▽)**
This button is used to move the cursor downward. It is also used to select items in the CAM SET UP menu.

⑥ **Right Button (▷)**
This button is used to move the cursor to the right. It is also selects the mode and can be used to adjust some levels.

⑦ **Left Button (◁)**
This button is used to move the cursor to the left. It also selects the mode and can be used to adjust some levels.

⑧ **Up Button (△)**
This button is used to move the cursor upward. It is also used to select items in the CAM SET UP menu.

⑨ **Set Button (□)**
This button is used to activate an item selected in the CAM SET UP menu.

⑩ **Gen-lock Termination Switch (Hi-Z, G/L 75Ω)**
Set this switch to Hi-Z when a gen-lock video input signal is looped through. In all other cases, set this switch to 75Ω.

⑪ **Power indicator**
This indicator lights up when the power of this camera is on.

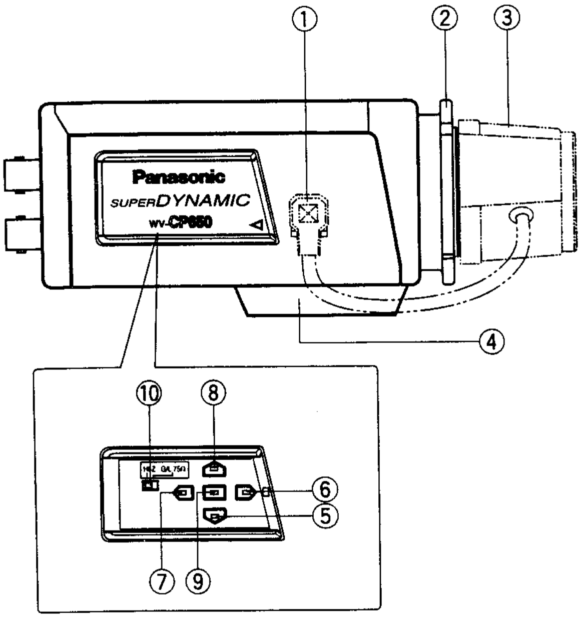
⑫ **Gen-lock Input Connector (GEN-LOCK)**
This connector is used to connect an external system for synchronization.

⑬ **Video Output Connector (VIDEO OUT)**
This connector is used to connect with the VIDEO IN connector of the monitor.

⑭ **Power Cord Socket**
This socket is used to connect the power cord (supplied as a standard accessory).

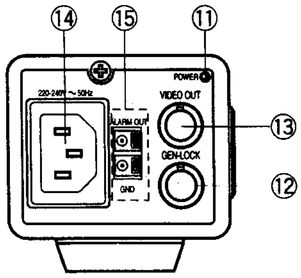
⑮ **AC/DC Compatible Input Terminal**
(DC 12V IN/AC 24V IN)
This terminal is for connecting the 12 V DC or 24 V AC power supply cord.

Caution:
Connect to 12V DC (10.5V-16V) or 24V AC (19.5V-28V) class 2 power supply only. Make sure to connect the grounding lead to the GND terminal when the power is supplied from a 24V AC power source.



Slide the panel to the left until it locks.

<WV-CP650>



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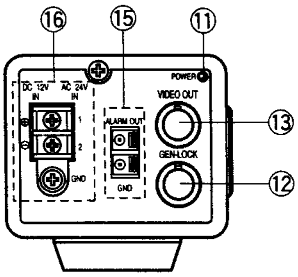


① **Auto Iris Lens Connector**
This connector is used to connect with the auto iris lens by a 4-pin male connector that is supplied as a standard accessory.

② **Back Focal Adjusting Ring**
This ring is used to adjust the back focal length or picture focus. Rotate this ring clockwise for a C-mount lens or counterclockwise for a CS-mount lens.

③ **Lens (Option)**

④ **Camera Mounting Screw Hole**
This hole is used to mount the camera onto a mounting bracket.

⑤ **Down Button (▽)**
This button is used to move the cursor downward. It is also used to select items in the CAM SET UP menu.

⑥ **Right Button (▷)**
This button is used to move the cursor to the right. It is also selects the mode and can be used to adjust some levels.

⑦ **Left Button (◁)**
This button is used to move the cursor to the left. It also selects the mode and can be used to adjust some levels.

⑧ **Up Button (△)**
This button is used to move the cursor upward. It is also used to select items in the CAM SET UP menu.

⑨ **Set Button (▭)**
This button is used to activate an item selected in the CAM SET UP menu.

⑩ **Gen-lock Termination Switch (Hi-Z, G/L 75Ω)**
Set this switch to Hi-Z when a gen-lock video input signal is looped through. In all other cases, set this switch to 75Ω.

⑪ **Power indicator**
This indicator lights up when the power of this camera is on.

⑫ **Gen-lock Input Connector (GEN-LOCK)**
This connector is used to connect an external system for synchronization.

⑬ **Video Output Connector (VIDEO OUT)**
This connector is used to connect with the VIDEO IN connector of the monitor.

⑭ **Power Cord Socket**
This socket is used to connect the power cord (supplied as a standard accessory).

⑮ **Alarm Output Terminal (ALARM OUT/GND)**
This terminal is used to connect to the ALARM INPUT connector (terminal) of an external equipment. When this camera detects motion, the alarm output signal is supplied to the connected external equipment.

⑯ **AC/DC Compatible Input Terminal (DC 12V IN/AC 24V IN)**
This terminal is for connecting the 12 V DC or 24 V AC power supply cord.

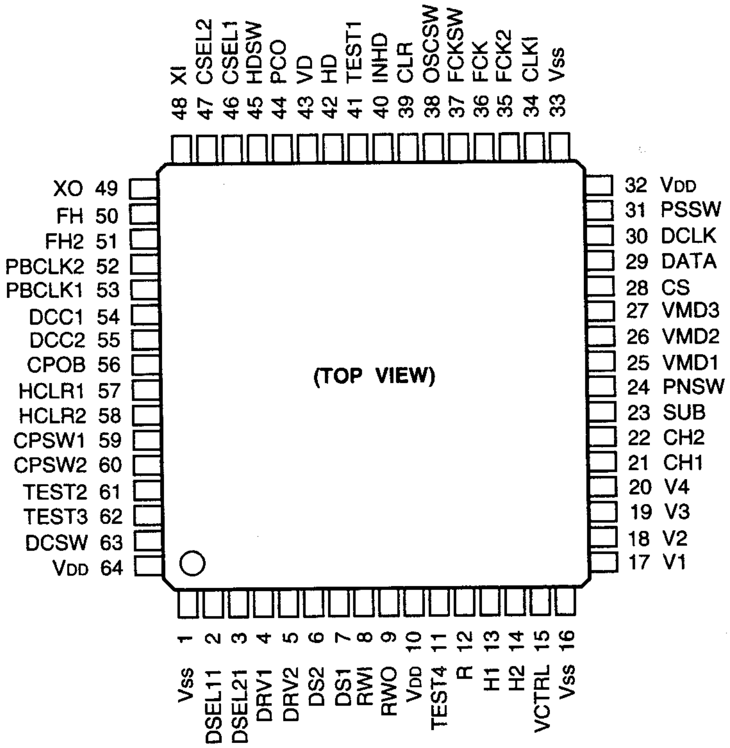
Caution:
Connect to 12V DC (10.5V-16V) or 24V AC (19.5V-28V) class 2 power supply only. Make sure to connect the grounding lead to the GND terminal when the power is supplied from a 24V AC power source.

CIRCUIT DESCRIPTION

IC Description

1. MCM Board

1.1. IC5 on the MCM Board is using the CCD Drive Pulse Generator IC MN5278C. Description of this IC is as follows:

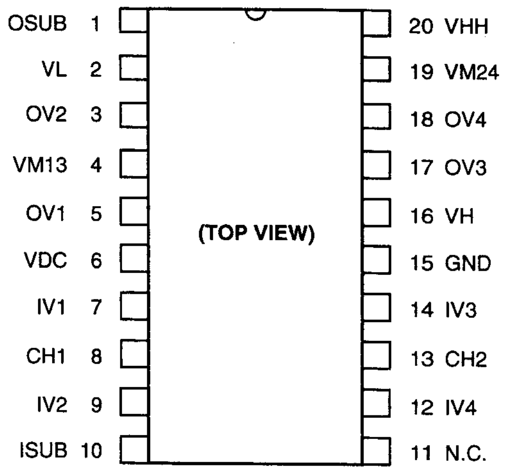

48 XI
47 CSEL2
46 CSEL1
45 HDSW
44 PCO
43 VD
42 HD
41 TEST1
40 INHD
39 CLR
38 OSCSW
37 FCKSW
36 FCK
35 FCK2
34 CLKI
33 Vss
XO 49
FH 50
FH2 51
PBCLK2 52
PBCLK1 53
DCC1 54
DCC2 55
CPOB 56
HCLR1 57
HCLR2 58
CPSW1 59
CPSW2 60
TEST2 61
TEST3 62
DCSW 63
VDD 64
(TOP VIEW)
32 VDD
31 PSSW
30 DCLK
29 DATA
28 CS
27 VMD3
26 VMD2
25 VMD1
24 PNSW
23 SUB
22 CH2
21 CH1
20 V4
19 V3
18 V2
17 V1
1 Vss
2 DSEL11
3 DSEL21
4 DRV1
5 DRV2
6 DS2
7 DS1
8 RWI
9 RWO
10 VDD
11 TEST4
12 R
13 H1
14 H2
15 VCTRL
16 Vss

Pin	Name	I/O	Description
1	Vss	–	Ground
2	DSELL11	I	DRV Pulse phase switching signal input terminal.
3	DSELL21	I	
4	DRV1	I	Drive Pulse input terminal
5	DRV2	I	
6	DS2	O	Pulse output terminals for CDS.
7	DS1	O	
8	RWI	I	R Transfer Pulse Width adjust input terminal.
9	RWO	O	R Transfer Pulse Width adjust output terminal.
10	VDD	–	Power supply terminal.
11	TEST4	–	Test terminal.
12	R	O	R Transfer Pulse output terminal.
13	H1	O	H1 Transfer Pulse output terminal.
14	H2	O	H2 Transfer Pulse output terminal.
15	VCTRL	–	Non connection.
16	Vss	–	Ground terminal.
17	V1	O	V1 Transfer Pulse output terminal.

Pin	Name	I/O	Description
18	V2	O	V2 Transfer Pulse output terminal.
19	V3	O	V3 Transfer Pulse output terminal.
20	V4	O	V4 Transfer Pulse output terminal.
21	CH1	O	Charge Pulse for V1 output terminal.
22	CH2	O	Charge Pulse for V2 output terminal.
23	SUB	O	SUB signal output terminal.
24	PNSW	I	TV System switching signal input terminal.(L: NTSC; H: PAL)
25	VMD1	I	Electronic Shutter switching signal input terminal.
26	VMD2	I	
27	VMD3	I	
28	CS	I	Chip Select signal input terminal for Serial Data.
29	DATA	I	Serial Data intput terminal.
30	DCLK	I	Serial Clock input terminal.
31	PSSW	–	Non connection.
32	VDD	–	Power supply terminal.

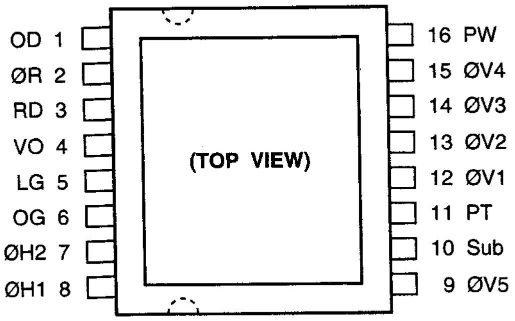
Pin	Name	I/O	Description
33	Vss	–	Ground terminal.
34	CLKI	I	Clock Pulse intput terminal.
35	FCK2	O	Clock Pulse output terminals.
36	FCK	O	
37	FCKSW	I	Clock Pulse switching signal input terminal.
38	OSCSW	I	OSC switching signal input terminal.
39	CLR	I	All clear signal input terminal. L: Clear; H: Active
40	INHD	–	Non connection.
41	TEST1	–	Test terminal.
42	HD	I	Horizontal Drive Pulse input terminal.
43	VD	I	Vertical Drive Pulse input terminal.
44	PCO	O	Phase Comparator output terminal.
45	HDSW	I	HD Switching signal input terminal. H: Internal; L: External
46	CSEL1	I	Clok Pulse phase switching signal input terminal.
47	CSEL2	I	
48	XI	I	2fck OSC input terminal.
49	XO	O	2fck OSC output terminal.
50	FH	O	FH Pulse output terminal.
51	FH2	O	FH/2 Pulse output terminal.
52	PBCLK2	O	Pre Blanking Pulse output terminal. Start: Rising edge of HCLR signal.
53	PBCLK1	O	Pre Blanking Pulse output terminal. Start: Rising edge of HD signal.
54	DCC1	–	Non connection
55	DCC2	–	
56	CPOB	O	OB Clamp Pulse output terminal.
57	HCLR1	–	Non connection.
58	HCLR2	O	øH Clear Pulse output terminal.
59	CPSW1	I	CPOB Phase Switching signal input terminals.
60	CPSW2	I	
61	TEST2	–	Test terminal
62	TEST3	–	
63	DCSW	I	DCC Phase Switching signal input terminal.
64	VDD	–	Power supply terminal.

1.2. IC3 and 6 on the MCM Board are using the Pulse Drive IC MN3112C.
Description of this IC is as follows:



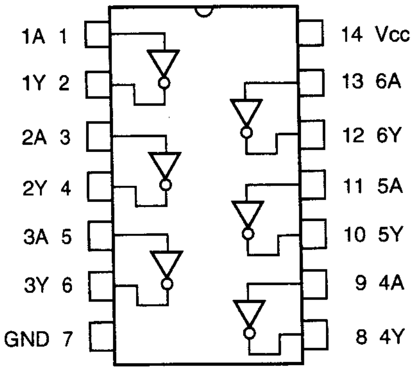
Pin	Name	I/O	Description
1	OSUB	O	VSUB signal output terminal.
2	VL	–	VL voltage supply terminal.
3	OV2	O	Vertical Pulse 2 output terminal.
4	VM13	I	VM13 voltage supply terminal.
5	OV1	O	Vertical Pulse 1 output terminal.
6	VDC	–	Power supply.
7	IV1	I	Vertical Pulse 1 input terminal.
8	CH1	I	Horizontal Pulse 1 input terminal.
9	IV2	I	Vertical Pulse 2 input terminal.
10	ISUB	I	VSUB signal input terminal.
11	N.C.	–	Non Connection.
12	IV4	I	Vertical Pulse 4 input terminal.
13	CH2	I	Horizontal Pulse 2 input terminal.
14	IV3	I	Vertical Pulse 3 input terminal.
15	GND	–	Ground terminal.
16	VH	–	VH voltage supply terminal.
17	OV3	O	Vertical Pulse 3 output terminal.
18	OV4	O	Vertical Pulse 4 output terminal.
19	VM24	–	VM24 voltage supply terminal.
20	VHH	–	VHH voltage supply terminal.

1.3. IC1 on the MCM Board is using the CCD Imaging Sensor IC MN37281FE.
Description of this IC is as follows:


OD 1
ØR 2
RD 3
VO 4
LG 5
OG 6
ØH2 7
ØH1 8
(TOP VIEW)
16 PW
15 ØV4
14 ØV3
13 ØV2
12 ØV1
11 PT
10 Sub
9 ØV5

Pin	Name	I/O	Description
1	OD	–	Power supply terminal for Drain of Output Amplifier.
2	ØR	I	Reset Gate Clock Pulse input terminal.
3	RD	–	Power supply terminal for Drain of Reset Amplifier.
4	VO	O	Video Signal outpur terminal.
5	LG	–	Gate Bias supply terminal for Drain of Reset Amplifier.
6	OG	–	Gate Bias supply terminal for Output Amplifier.
7	ØH2	I	Horizontal Shift Register Transfer Clock Pulse input terminal.
8	ØH1	I	Horizontal Shift Register Transfer Clock Pulse input terminal.
9	ØV5	I	Vertical Shift Register Transfer Clock Pulse input terminal.
10	Sub	–	Board (Overflow Drain).
11	PT	I	Bias supply terminal for protection transistor.
12	ØV1	I	Vertical Shift Register Clock Pulse input terminal.
13	ØV2	I	Vertical Shift Register Clock Pulse input terminal.
14	ØV3	I	Vertical Shift Register Clock Pulse input terminal.
15	ØV4	I	Vertical Shift Register Clock Pulse input terminal.
16	PW	–	Ground terminal.

1.4. IC2 on the MCM Board is using the Hex Inverters IC YWSN74LVC04Y.
Description of this IC is as follows:


1A 1
1Y 2
2A 3
2Y 4
3A 5
3Y 6
GND 7
14 Vcc
13 6A
12 6Y
11 5A
10 5Y
9 4A
8 4Y

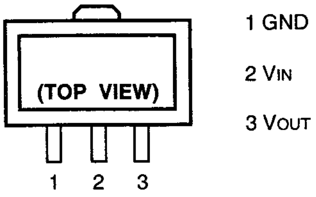
(TOP VIEW)

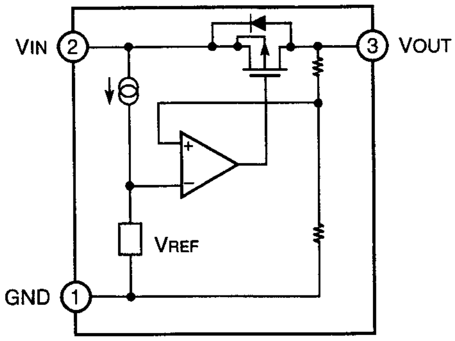
Truth Table

INPUT A	OUTPUT Y
L	H
H	L

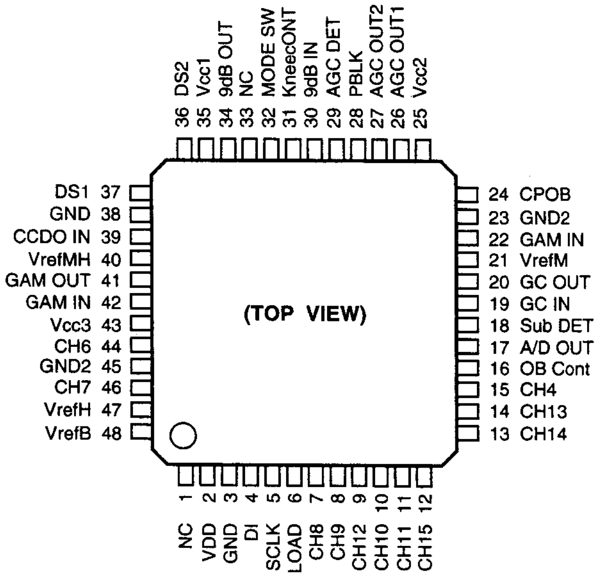
2. Core Mother Board

2.1. IC5 on the Core Mother Board is using the +3.3V Regulator IC S81233PGT1.
Description of this IC is as follows:


(TOP VIEW)
1 GND
2 VIN
3 VOUT
1
2
3


VIN
2
3
VOUT
+
–
VREF
GND
1

2.2. IC4 on the Core Mother Board is using the CDS, AGC, GAMMA Control IC AN2108FHP.
Description of this IC is as follows:

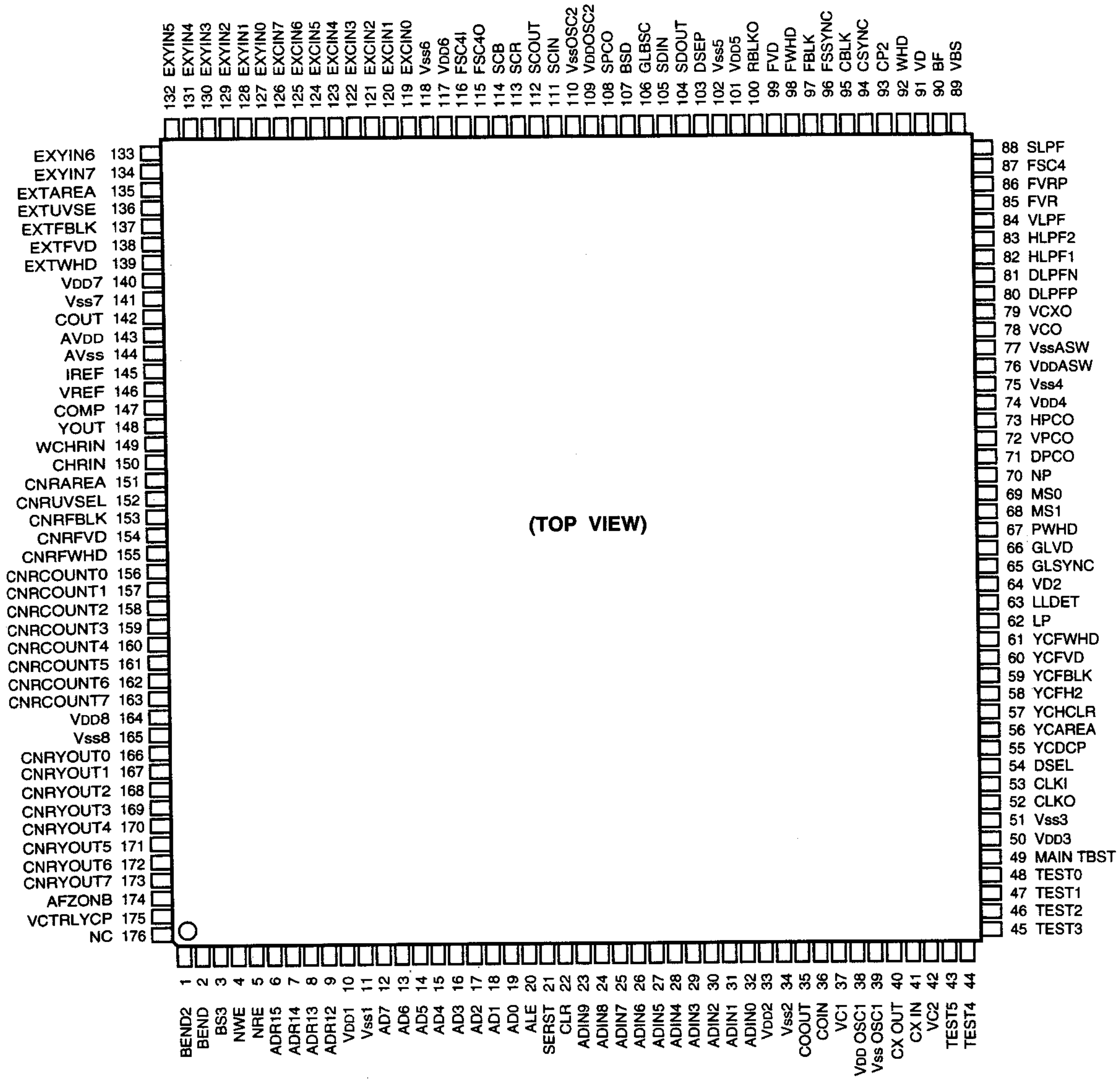

36 DS2
35 Vcc1
34 9dB OUT
33 NC
32 MODE SW
31 KneeCONT
30 9dB IN
29 AGC DET
28 PBLK
27 AGC OUT2
26 AGC OUT1
25 Vcc2
DS1 37
GND 38
CCDO IN 39
VrefMH 40
GAM OUT 41
GAM IN 42
Vcc3 43
CH6 44
GND2 45
CH7 46
VrefH 47
VrefB 48
(TOP VIEW)
24 CPOB
23 GND2
22 GAM IN
21 VrefM
20 GC OUT
19 GC IN
18 Sub DET
17 A/D OUT
16 OB Cont
15 CH4
14 CH13
13 CH14
1 NC
2 VDD
3 GND
4 DI
5 SCLK
6 LOAD
7 CH8
8 CH9
9 CH12
10 CH10
11 CH11
12 CH15

Pin	Name	I/O	Description
1	NC	–	Non connection
2	VDD	O	Refrence Voltage(3.5V) output terminal.
3	GND	–	Ground terminal.
4	DI	I	Serial DATA input terminal for D/A.
5	SCLK	I	Serial Clock Pulse input terminal for D/A.
6	LOAD	I	Load signal input terminal for D/A.
7	CH8	O	Analog DATA output terminals for D/A Converter circuit.
8	CH9	O	
9	CH12	O	
10	CH10	O	
11	CH11	O	
12	CH15	O	
13	CH14	O	
14	CH13	O	
15	CH4	O	
16	OB Cont	I	OB signal adjusting terminal.
17	A/D OUT	O	A/D signal output terminal.
18	Sub DET	I	Sub Amplifier Detector terminal.
19	GC IN	I	Sub Amplifier input terminal.
20	GC OUT	–	Non connection.
21	VrefM	O	Reference Voltage(1.8V) output terminal.
22	GAM IN	I	GAMMA signal input terminal.
23	GND2	–	Ground terminal.
24	CPOB	I	OB Clamp Pulse intput terminal.

Pin	Name	I/O	Description
25	Vcc	–	Power supply terminal.
26	AGC OUT1	O	AGC signal output terminal.
27	AGC OUT2	–	Non Connection.
28	PBLK	I	Pre Blanking Pulse input terminal.
29	AGC DET	I	AGC Detector DC terminal.
30	9dB IN	I	CDS signal(9dB) input terminal.
31	Knee Cont	I	TRAP signal input terminal.
32	MODE SW	I	GAMMA mode switching signal input terminal.
33	NC	–	CDS Dummy terminal.
34	9dB OUT	O	CDS signal(9dB) output terminal.
35	Vcc1	–	Power supply terminal.
36	DS2	I	Sampling Pulse DS2 input terminal.
37	DS1	I	Sampling Pulse DS1 input terminal.
38	GND	–	Ground terminal.
39	CCDO IN	I	CCD signal input terminal.
40	VrefMH	O	Reference Voltage(2.7V) output terminal.
41	GAM OUT	O	GAMMA signal output terminal.
42	GAM IN	I	Pre Apature Delay signal input terminal.
43	Vcc3	–	Power supply terminal.
44	CH6	O	Analog DATA output terminal for D/A.
45	GND2	–	Ground terminal.
46	CH7	O	Analog DATA output terminal for D/A.
47	VrefH	O	Reference Voltage(3.0V) output terminal.
48	VrefB	O	Reference Voltage(1.0V) output terminal.

3. Main Board

3.1. IC7 on the Main Board is using the Supper Dynamic Processing DSP IC MN673521.
Description of this IC is as follows:


(TOP VIEW)
132 EXYIN5
131 EXYIN4
130 EXYIN3
129 EXYIN2
128 EXYIN1
127 EXYIN0
126 EXCIN7
125 EXCIN6
124 EXCIN5
123 EXCIN4
122 EXCIN3
121 EXCIN2
120 EXCIN1
119 EXCIN0
118 Vss6
117 VDD6
116 FSC4I
115 FSC4O
114 SCB
113 SCR
112 SCOUT
111 SCIN
110 VssOSC2
109 VDDOSC2
108 SPCO
107 BSD
106 GLBSC
105 SDIN
104 SDOUT
103 DSEP
102 Vss5
101 VDD5
100 RBLKO
99 FVD
98 FWHD
97 FBLK
96 FSSYNC
95 CBLK
94 CSYNC
93 CP2
92 WHD
91 VD
90 BF
89 VBS
88 SLPF
87 FSC4
86 FVRP
85 FVR
84 VLPF
83 HLPF2
82 HLPF1
81 DLPFN
80 DLPFP
79 VCXO
78 VCO
77 VssASW
76 VDDASW
75 Vss4
74 VDD4
73 HPCO
72 VPCO
71 DPCO
70 NP
69 MS0
68 MS1
67 PWHD
66 GLVD
65 GLSYNC
64 VD2
63 LLDET
62 LP
61 YCFWHD
60 YCFVD
59 YCFBLK
58 YCFH2
57 YCHCLR
56 YCAREA
55 YCDCP
54 DSEL
53 CLKI
52 CLKO
51 Vss3
50 VDD3
49 MAIN TBST
48 TEST0
47 TEST1
46 TEST2
45 TEST3
EXYIN6 133
EXYIN7 134
EXTAREA 135
EXTUVSE 136
EXTFBLK 137
EXTFVD 138
EXTWHD 139
VDD7 140
Vss7 141
COUT 142
AVDD 143
AVss 144
IREF 145
VREF 146
COMP 147
YOUT 148
WCHRIN 149
CHRIN 150
CNRAREA 151
CNRUVSEL 152
CNRFBLK 153
CNRFVD 154
CNRFWHD 155
CNRCOUNT0 156
CNRCOUNT1 157
CNRCOUNT2 158
CNRCOUNT3 159
CNRCOUNT4 160
CNRCOUNT5 161
CNRCOUNT6 162
CNRCOUNT7 163
VDD8 164
Vss8 165
CNRYOUT0 166
CNRYOUT1 167
CNRYOUT2 168
CNRYOUT3 169
CNRYOUT4 170
CNRYOUT5 171
CNRYOUT6 172
CNRYOUT7 173
AFZONB 174
VCTRLYCP 175
NC 176
1 BEND2
2 BEND
3 BS3
4 NWE
5 NRE
6 ADR15
7 ADR14
8 ADR13
9 ADR12
10 VDD1
11 Vss1
12 AD7
13 AD6
14 AD5
15 AD4
16 AD3
17 AD2
18 AD1
19 AD0
20 ALE
21 SERST
22 CLR
23 ADIN9
24 ADIN8
25 ADIN7
26 ADIN6
27 ADIN5
28 ADIN4
29 ADIN3
30 ADIN2
31 ADIN1
32 ADIN0
33 VDD2
34 Vss2
35 COOUT
36 COIN
37 VC1
38 VDD OSC1
39 Vss OSC1
40 CX OUT
41 CX IN
42 VC2
43 TEST5
44 TEST4

Pin	Name	I/O	Description
1	BEND2	–	Non connection
2	BEND	O	Border End Pulse output terminal.
3	BS3	–	Non Connection.
4	NWE	I	Write Enable signal input terminal.
5	NRE	I	Read Enable signal input terminal.
6	ADR15	I	Adress DATA input terminals. (8-Bit)
7	ADR14	I	
8	ADR13	I	
9	ADR12	I	
10	VDD1	–	Power supply terminal.
11	Vss1	–	Ground terminal.

Pin	Name	I/O	Description
12	AD7	I/O	DATA Bus terminals.(8-Bit)
13	AD6	I/O	
14	AD5	I/O	
15	AD4	I/O	
16	AD3	I/O	
17	AD2	I/O	
18	AD1	I/O	
19	AD0	I/O	
20	ALE	I	Adress Latch Enable signal input terminal.
21	SERST	I	Reset Pulse input terminal.
22	CLR	I	Clear signal input terminal.

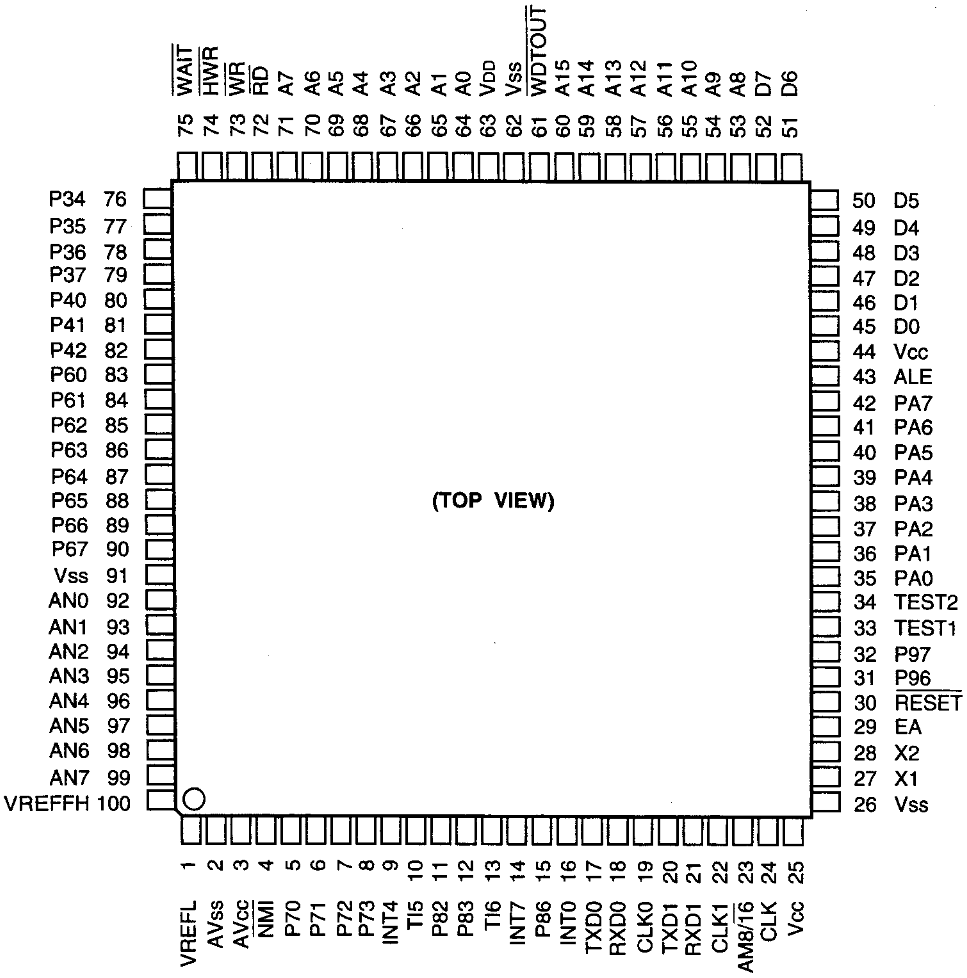
Pin	Name	I/O	Description
23	ADIN9	I	D/A DATA input terminals.(10-Bit)
24	ADIN8	I	
25	ADIN7	I	
26	ADIN6	I	
27	ADIN5	I	
28	ADIN4	I	
29	ADIN3	I	
30	ADIN2	I	
31	ADIN1	I	
32	ADIN0	I	
33	VDD2	–	Power supply terminal.
34	Vss2	–	Ground terminal.
35	COOUT	O	Phase Comparator output terminal.
36	COIN	I	Phase Comparator input terminal.
37	VC1	–	Non Connection.
38	VDDOSC1	–	Ground terminal.
39	VssOSC1	–	Power supply terminal.
40	CXOUT	O	Phase Comparator output terminal.
41	CXIN	I	Phase Comparator input terminal.
42	VC2	–	Non Connection.
43	TEST5	–	Test terminals.
44	TEST4	–	
45	TEST3	–	
46	TEST2	–	
47	TEST1	–	
48	TEST0	–	
49	MINTBST	–	MINTBST signal terminal.
50	VDD3	–	Power supply terminal.
51	Vss3	–	Ground terminal.
52	CLKO	–	Non Connection.
53	CLKI	I	Clock Pulse input terminal.
54	DSEL	–	DSEL signal terminal.
55	YCDCP	I	Digital Clamp Pulse input terminal for Y/C.
56	YCAREA	I	AREA signal input terminal for Y/C.
57	YCHCLR	I	øH Clear Pulse input terminal for Y/C.
58	YCFH2	I	1/2FH Pulse input terminal for Y/C.
59	YCFBLK	I	Blanking Pulse input terminal for Y/C.
60	YCFVD	I	VD Pulse input terminal for Y/C.
61	YCFWHD	I	HD Pulse input terminal for Y/C.
62	LP	O	Line Pulse output terminal.
63	LLDET	I	Line Lock Detect signal input terminal.
64	VD2	I	VD2 input terminal.
65	GLSYNC	I	Sync signal input terminal for G/L.

Pin	Name	I/O	Description
66	GLVD	I	VD Pulse input terminal for G/L.
67	PWHD	I	Pre HD Pulse input terminal.
68	MS1	–	Non Connection.
69	MS0	–	
70	NP	I	NTSC/PAL Selection signal input terminal.
71	DPCO	O	Phase Comparator output terminal.
72	VPCO	O	Vertical Phase Comparator output terminal.
73	HPCO	O	Horizontal Phase Comparator output terminal.
74	VDD4	–	Power supply terminal.
75	Vss4	–	Ground terminal.
76	VDDASW	–	Power supply terminal.
77	VssASW	–	Ground terminal.
78	VCO	I	VCO signal input terminal.
79	VCXO	I	VCXO signal input terminal.
80	DLPFP	I	Digital Low Pass Filter signal input terminal.
81	DLPFN	I	
82	HLPF1	I	Horizontal Low Pass Filter signal input terminal.
83	HLPF2	I	
84	VLPF	I	Vertical Low Pass Filter signal input terminal.
85	FVR	I	FVR signal input terminal.
86	FVRP	I	FVRP signal input terminal.
87	FSC4	I	SC VCXO signal input terminal.
88	SLPF	I	SC Low Pass Filter signal input terminal.
89	VBS	O	Bias Setting signal output terminal.
90	BF	O	Burst Flag Pulse output terminal.
91	VD	–	Non Connection.
92	WHD	I/O	WHD signal input/output terminal.
93	CP2	O	Clamp Pulse output terminal.
94	CSYNC	O	Composite Sync signal output terminal.
95	CBLK	O	Composite Blanking signal output terminal.
96	FSYNC	–	Non Connection.
97	FBLK	O	Blanking Pulse output terminal.
98	FWHD	O	Horizontal Drive Pulse output terminal.
99	FVD	O	Vertical Drive Pulse output terminal.
100	RBLKO	–	Non Connection.
101	VDD5	–	Power supply terminal.
102	Vss5	–	Ground terminal.
103	DSEP	O	DATA Seperation signal output terminal.
104	SDOUT	O	DATA output terminal.
105	SDIN	I	DATA input terminal.
106	GLBSC	I	G/L Burst signal input terminal.
107	BSD	I	Burst DC signal input terminal.

Pin	Name	I/O	Description
108	SPCO	O	SC Phase Comparator output terminal.
109	VDDOSC2	–	Power supply terminal.
110	VssOSC2	–	Ground terminal.
111	SCIN	I	Phase Comparator input terminal.
112	SCOUT	O	Phase Comparator output terminal.
113	SCR	–	Non connection.
114	SCB	–	
115	FSC4O	O	4FSC Clock Pulse output terminal.
116	FSC4I	I	4FSC Clock Pulse input terminal.
117	VDD6	–	Power supply terminal.
118	Vss6	–	Ground terminal.
119	EXCIN0	I	Chrominance DATA input terminals. (8-Bit)
120	EXCIN1	I	
121	EXCIN2	I	
122	EXCIN3	I	
123	EXCIN4	I	
124	EXCIN5	I	
125	EXCIN6	I	
126	EXCIN7	I	
127	EXYIN0	I	Luminance DATA input terminals. (8-Bit)
128	EXYIN1	I	
129	EXYIN2	I	
130	EXYIN3	I	
131	EXYIN4	I	
132	EXYIN5	I	
133	EXYIN6	I	
134	EXYIN7	I	
135	EXTAREA	I	AREA signal input terminal.
136	EXTUVSEL	I	U/V Selection signal input terminal.
137	EXTFBLK	I	Blanking Pulse input terminal.
138	EXTFVD	I	Vertical Drive Pulse input terminal.
139	EXTWHD	I	Horizontal Drive Pulse input terminal.
140	VDD7	–	Power supply terminal.
141	Vss7	–	Ground terminal.
142	COUT	O	Chrominance signal output terminal.
143	AVDD	–	Power supply terminal.
144	AVss	–	Ground terminal.
145	IREF	–	IREF terminal.
146	VREF	–	VREF terminal.
147	COMP	–	COMP terminal.
148	YOUT	O	Luminance signal output terminal.
149	WCHRIN	I	Character signal input terminal.
150	CHRIN	I	

Pin	Name	I/O	Description
151	CNRAREA	O	AREA signal output terminal.
152	CNRUVSEL	O	U/V Selection signal output terminal.
153	CNRFBLK	O	Blanking Pulse output terminal.
154	CNRFVD	O	Vertical Drive Pulse output terminal.
155	CNRFWHD	O	Horizontal Drive Pulse output terminal.
156	CNRCOUT0	O	Chrominance DATA output terminals. (8-Bit)
157	CNRCOUT1	O	
158	CNRCOUT2	O	
159	CNRCOUT3	O	
160	CNRCOUT4	O	
161	CNRCOUT5	O	
162	CNRCOUT6	O	
163	CNRCOUT7	O	
164	VDD8	–	Power supply terminal.
165	Vss8	–	Ground terminal.
166	CNRYOUT0	O	Luminance DATA output terminals. (8-Bit)
167	CNRYOUT1	O	
168	CNRYOUT2	O	
169	CNRYOUT3	O	
170	CNRYOUT4	O	
171	CNRYOUT5	O	
172	CNRYOUT6	O	
173	CNRYOUT7	O	
174	AFZONB	–	AFZONB terminal.
175	VCTRLYCP	–	VCTRLYCP terminal.
176	NC	–	Non connection.

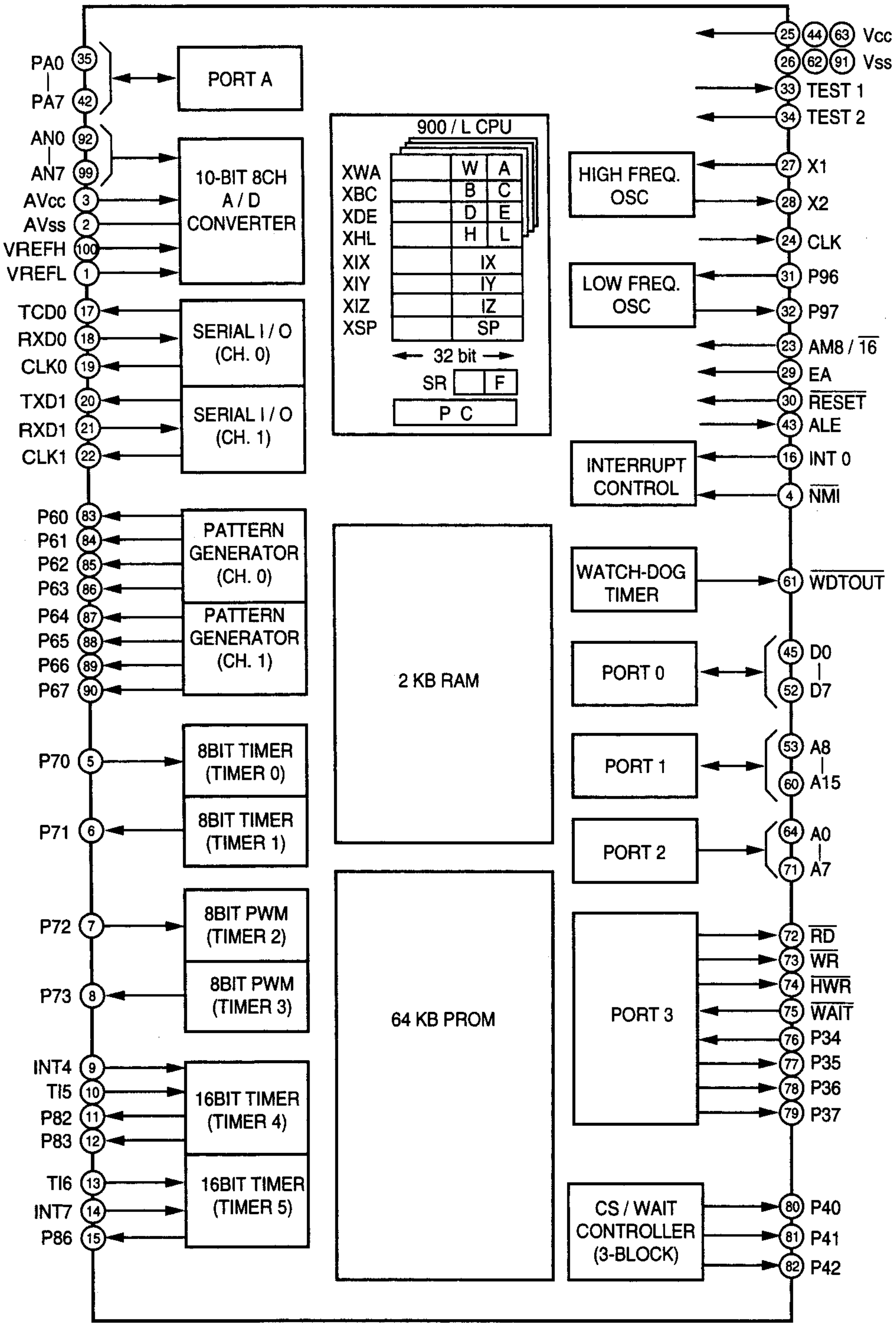
3.2. IC1 on the Main Board is using the 16-Bit/64k Microcomputer IC YWT93C4F9041.
Description of this IC is as follows:


(TOP VIEW)
1 VREFL
2 AVss
3 AVcc
4 NMI
5 P70
6 P71
7 P72
8 P73
9 INT4
10 TI5
11 P82
12 P83
13 TI6
14 INT7
15 P86
16 INT0
17 TXD0
18 RXD0
19 CLK0
20 TXD1
21 RXD1
22 CLK1
23 AM8/16
24 CLK
25 Vcc
26 Vss
27 X1
28 X2
29 EA
30 RESET
31 P96
32 P97
33 TEST1
34 TEST2
35 PA0
36 PA1
37 PA2
38 PA3
39 PA4
40 PA5
41 PA6
42 PA7
43 ALE
44 Vcc
45 D0
46 D1
47 D2
48 D3
49 D4
50 D5
51 D6
52 D7
53 A8
54 A9
55 A10
56 A11
57 A12
58 A13
59 A14
60 A15
61 WDTOUT
62 Vss
63 VDD
64 A0
65 A1
66 A2
67 A3
68 A4
69 A5
70 A6
71 A7
72 RD
73 WR
74 HWR
75 WAIT
P34 76
P35 77
P36 78
P37 79
P40 80
P41 81
P42 82
P60 83
P61 84
P62 85
P63 86
P64 87
P65 88
P66 89
P67 90
Vss 91
AN0 92
AN1 93
AN2 94
AN3 95
AN4 96
AN5 97
AN6 98
AN7 99
VREFFH 100

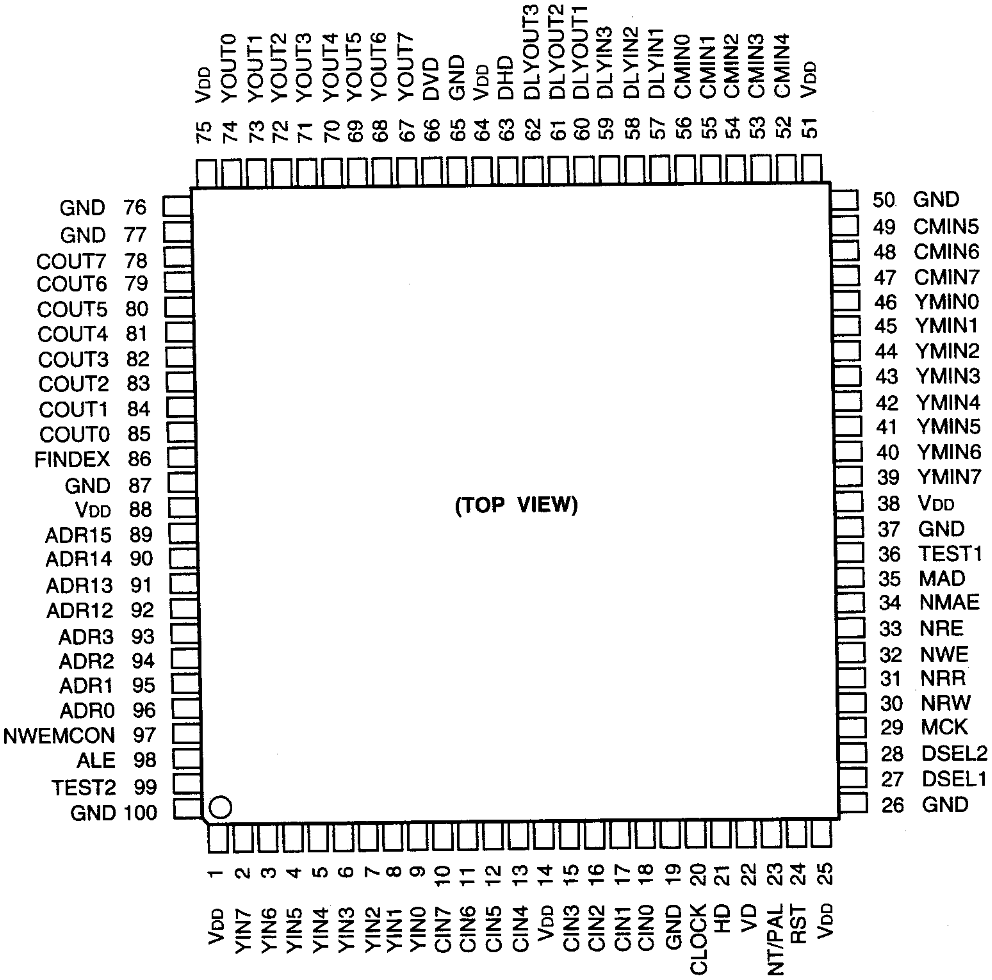
Pin	Name	I/O	Description
1	VREFL	–	Reference Voltage(H) terminal.
2	AVss	–	Ground terminal.
3	AVcc	–	Power supply terminal.
4	$\overline{\text{NMI}}$	I	Non-Maskable input terminal.
5	P70	I	Field signal input terminal.
6	P71	O	TXDET signal output terminal.
7	P72	–	Non connection.
8	P73	–	
9	INT4	I	Inline Pulse input terminal.
10	TI5	I	VD input terminal.
11	P82	–	Non connection.
12	P83	O	Read Enable signal output terminal.
13	TI6	I	Border End Pulse input terminal.
14	INT7	–	Non connection.
15	P86	–	
16	INT0	–	
17	TXD0	O	Serial Transmitting DATA output terminal.
18	RXD0	I	Serial Receiving DATA input terminal.
19	CLK0	I/O	Serial Clock Pulse in/output terminal.
20	TXD1	O	Serial Transmitting DATA output terminal.
21	RXD1	I	Serial Receiving DATA input terminal.
22	CLK1	–	Non connection.
23	AM8/$\overline{16}$	I	Address Mode Select signal input terminal.
24	CLK	–	Non connection.

Pin	Name	I/O	Description
25	Vcc	–	Power supply terminal.
26	Vss	–	Ground terminal.
27	X1	I	Crystal Oscillator input terminal.
28	X2	O	Crystal Oscillator output terminal.
29	EA	I	External Access terminal.
30	$\overline{\text{RESET}}$	I	Reset Pulse input terminal.
31	P96	–	Non connection.
32	P97	–	
33	TEST1	O	Test terminals.
34	TEST2	I	
35	PA0	O	Chip Selection signal output terminal.
36	PA1	O	D/A Load signal output terminal.
37	PA2	O	TG Chip Selection signal output terminal.
38	PA3	I	UP Switch input terminal.
39	PA4	I	DOWN Switch input terminal
40	PA5	I	RIGHT Switch input terminal
41	PA6	I	LEFT Switch input terminal
42	PA7	I	SET Switch input terminal
43	ALE	O	Address Latch Enable signal output terminal.
44	Vcc	–	Power supply terminal.
45	D0	I/O	DATA Bus terminals.
46	D1	I/O	
47	D2	I/O	
48	D3	I/O	
49	D4	I/O	
50	D5	I/O	
51	D6	I/O	
52	D7	I/O	
53	A8	O	Address signal output terminals.
54	A9	O	
55	A10	O	
56	A11	O	
57	A12	O	
58	A13	O	
59	A14	O	
60	A15	O	
61	$\overline{\text{WDTOUT}}$	–	Non Connection.
62	Vss	–	Ground terminal.
63	VDD	–	Power supply terminal.
64	A0	–	Non Connection.
65	A1	–	
66	A2	–	

Pin	Name	I/O	Description
67	A3	–	Non Connection.
68	A4	–	
69	A5	–	
70	A6	–	
71	A7	–	
72	RD	O	Read Strobe signal output terminal.
73	WR	O	Write Strobe signal output terminal.
74	HWR	–	Non connection.
75	$\overline{\text{WAIT}}$	–	
76	$\overline{\text{P34}}$	I	Power On Reset signal input terminal.
77	$\overline{\text{P35}}$	–	Non connection.
78	$\overline{\text{P36}}$	O	Line Lock Pulse Detection signal output terminal.
79	P37	O	HDRBSET signal output terminal.
80	P40	O	FLICKERESS signal output terminal.
81	P41	O	Write Enable signal output terminal for Memory Controller.
82	P42	O	ALE signal output terminal for Memory Controller.
83	P60	O	SERVO signal output terminal.
84	P61	O	NTSC/PAL Selection signal output terminal for Pattern Generator.
85	P62	O	EBUSY signal output terminal for Pattern Generator.
86	P63	O	Character Chip Selection signal output terminal for Pattern Generator.
87	P64	O	TEST terminal for Pattern Generator.
88	P65	O	Line Lock Detection signal output terminal for Pattern Generator.
89	P66	O	RS485 signal output terminal for Pattern Generator.
90	P67	O	ALARM output terminal for Pattern Generator.
91	Vss	–	Ground terminal.
92	AN0	–	Non connection.
93	AN1	–	
94	AN2	–	
95	AN3	–	
96	AN4	–	
97	AN5	–	
98	AN6	–	
99	AN7	–	
100	VREFH	I	Reference Voltage(L) input terminal.


PA0 35
PA7 42
PORT A
AN0 92
AN7 99
AVcc 3
AVss 2
VREFH 100
VREFL 1
10-BIT 8CH A / D CONVERTER
TCD0 17
RXD0 18
CLK0 19
SERIAL I / O (CH. 0)
TXD1 20
RXD1 21
CLK1 22
SERIAL I / O (CH. 1)
P60 83
P61 84
P62 85
P63 86
PATTERN GENERATOR (CH. 0)
P64 87
P65 88
P66 89
P67 90
PATTERN GENERATOR (CH. 1)
P70 5
8BIT TIMER (TIMER 0)
P71 6
8BIT TIMER (TIMER 1)
P72 7
8BIT PWM (TIMER 2)
P73 8
8BIT PWM (TIMER 3)
INT4 9
TI5 10
P82 11
P83 12
16BIT TIMER (TIMER 4)
TI6 13
INT7 14
P86 15
16BIT TIMER (TIMER 5)
900 / L CPU
XWA
XBC
XDE
XHL
XIX
XIY
XIZ
XSP
W A
B C
D E
H L
IX
IY
IZ
SP
32 bit
SR
F
P C
2 KB RAM
64 KB PROM
25 44 63 Vcc
26 62 91 Vss
33 TEST 1
34 TEST 2
HIGH FREQ. OSC
27 X1
28 X2
24 CLK
LOW FREQ. OSC
31 P96
32 P97
23 AM8 / $\overline{16}$
29 EA
30 $\overline{\text{RESET}}$
43 ALE
INTERRUPT CONTROL
16 INT 0
4 $\overline{\text{NMI}}$
WATCH-DOG TIMER
61 $\overline{\text{WDTOUT}}$
PORT 0
45 D0
52 D7
PORT 1
53 A8
60 A15
PORT 2
64 A0
71 A7
PORT 3
72 $\overline{\text{RD}}$
73 $\overline{\text{WR}}$
74 $\overline{\text{HWR}}$
75 $\overline{\text{WAIT}}$
76 P34
77 P35
78 P36
79 P37
CS / WAIT CONTROLLER (3-BLOCK)
80 P40
81 P41
82 P42

3.3. IC6 on the Main Board is using the Memory Controller for Electric Gain Up IC YWUPD97047GC. Description of this IC is as follows: (for WV-CP650 and WV-CP654)


(TOP VIEW)
1 VDD
2 YIN7
3 YIN6
4 YIN5
5 YIN4
6 YIN3
7 YIN2
8 YIN1
9 YIN0
10 CIN7
11 CIN6
12 CIN5
13 CIN4
14 VDD
15 CIN3
16 CIN2
17 CIN1
18 CIN0
19 GND
20 CLOCK
21 HD
22 VD
23 NT/PAL
24 RST
25 VDD
26 GND
27 DSEL1
28 DSEL2
29 MCK
30 NRW
31 NRR
32 NWE
33 NRE
34 NMAE
35 MAD
36 TEST1
37 GND
38 VDD
39 YMIN7
40 YMIN6
41 YMIN5
42 YMIN4
43 YMIN3
44 YMIN2
45 YMIN1
46 YMIN0
47 CMIN7
48 CMIN6
49 CMIN5
50 GND
51 VDD
52 CMIN4
53 CMIN3
54 CMIN2
55 CMIN1
56 CMIN0
57 DLYIN1
58 DLYIN2
59 DLYIN3
60 DLYOUT1
61 DLYOUT2
62 DLYOUT3
63 DHD
64 VDD
65 GND
66 DVD
67 YOUT7
68 YOUT6
69 YOUT5
70 YOUT4
71 YOUT3
72 YOUT2
73 YOUT1
74 YOUT0
75 VDD
76 GND
77 GND
78 COUT7
79 COUT6
80 COUT5
81 COUT4
82 COUT3
83 COUT2
84 COUT1
85 COUT0
86 FINDEX
87 GND
88 VDD
89 ADR15
90 ADR14
91 ADR13
92 ADR12
93 ADR3
94 ADR2
95 ADR1
96 ADR0
97 NWEMCON
98 ALE
99 TEST2
100 GND

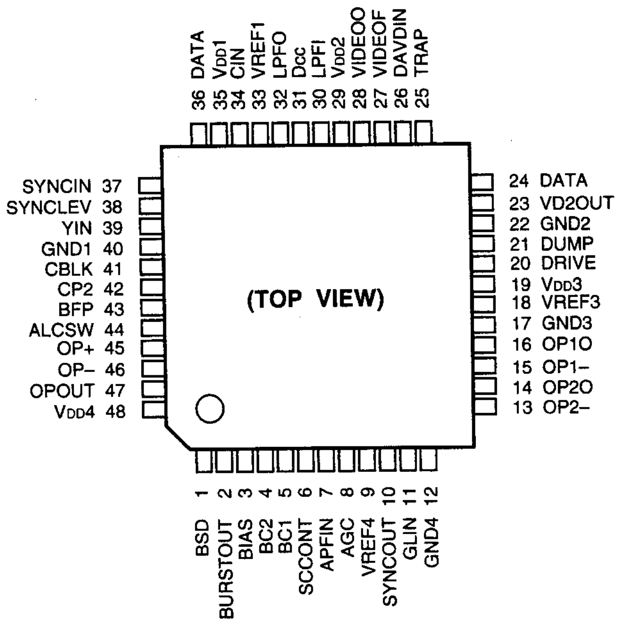
Pin	Name	I/O	Description
1	VDD	–	Power supply terminal.
2	YIN7	I	Luminance DATA input terminals. (8-Bit)
3	YIN6	I	
4	YIN5	I	
5	YIN4	I	
6	YIN3	I	
7	YIN2	I	
8	YIN1	I	
9	YIN0	I	
10	CIN7	I	Chrominance DATA input terminals. (8-Bit)
11	CIN6	I	
12	CIN5	I	
13	CIN4	I	
14	VDD	–	Power supply terminal.

Pin	Name	I/O	Description
15	CIN3	I	Chrominance DATA input terminals. (8-Bit)
16	CIN2	I	
17	CIN1	I	
18	CIN0	I	
19	GND	–	Ground terminal.
20	CLOCK	I	Clock Pulse input terminal.
21	HD	I	Horizontal Drive Pulse input terminal.
22	VD	I	Vertical Drive Pulse input terminal.
23	NT/PAL	I	NTSC/PAL Selection signal input terminal.
24	RST	I	Initial Reset signal input terminal.
25	VDD	–	Power supply terminal.
26	GND	–	Ground terminal.
27	DSEL1	I	DSEL signal input terminals.
28	DSEL2	I	

Pin	Name	I/O	Description
29	MCK	O	Serial Clock Pluse output terminal for Memory.
30	NRW	O	Write Reset Pulse output terminal for Memory.
31	NRR	O	Read Reset Pulse output terminal for Memory.
32	NWE	O	Write Enable signal output terminal for Memory.
33	NRE	O	Read Enable signal output terminal for Memory.
34	NMAE	O	Address Enable signal output terminal for Memory.
35	MAD	O	Address signal output terminal for Memory.
36	TEST1	–	Test terminal.
37	GND	–	Ground terminal.
38	VDD	–	Power supply terminal.
39	YMIN7	I	Memory Luminance DATA input terminals. (8-Bit)
40	YMIN6	I	
41	YMIN5	I	
42	YMIN4	I	
43	YMIN3	I	
44	YMIN2	I	
45	YMIN1	I	
46	YMIN0	I	
47	CMIN7	I	Memory Chrominance DATA input terminals. (8-Bit)
48	CMIN6	I	
49	CMIN5	I	
50	GND	–	Ground terminal.
51	VDD	–	Power supply terminal.
52	CMIN4	I	Memory Chrominance DATA input terminals. (8-Bit)
53	CMIN3	I	
54	CMIN2	I	
55	CMIN1	I	
56	CMIN0	I	
57	DLYIN1	I	Delay signal input terminals.
58	DLYIN2	I	
59	DLYIN3	I	
60	DLYOUT1	O	Delay signal output terminals.
61	DLYOUT2	O	
62	DLYOUT3	O	
63	DHD	O	Horizontal Drive Pulse Output terminal.
64	VDD	–	Power supply terminal.
65	GND	–	Ground terminal.
66	DVD	O	Vertical Drive Pulse output terminal.
67	YOUT7	O	Luminance DATA output terminals. (8-Bit)
68	YOUT6	O	
69	YOUT5	O	
70	YOUT4	O	
71	YOUT3	O	
72	YOUT2	O	
73	YOUT1	O	
74	YOUT0	O	

Pin	Name	I/O	Description
75	VDD	–	Power supply terminal.
76	GND	–	Ground terminal.
77	GND	–	
78	COUT7	O	Chrominance DATA output terminals. (8-Bit)
79	COUT6	O	
80	COUT5	O	
81	GOUT4	O	
82	COUT3	O	
83	COUT2	O	
84	COUT1	O	
85	COUT0	O	
86	FINDEX	O	Field signal output terminal for Microcomputer.
87	GND	–	Ground terminal.
88	VDD	–	Power supply termianl.
89	ADR15	I/O	Address DATA input/output terminals. (8-Bit)
90	ADR14	I/O	
91	ADR13	I/O	
92	ADR12	I/O	
93	ADR3	I/O	
94	ADR2	I/O	
95	ADR1	I/O	
96	ADR0	I/O	
97	NWEMCON	I	Write Enable signal input terminal.
98	ALE	I	Address Latch Enable signal input terminal.
99	TEST2	–	Test terminal.
100	GND	–	Ground terminal.

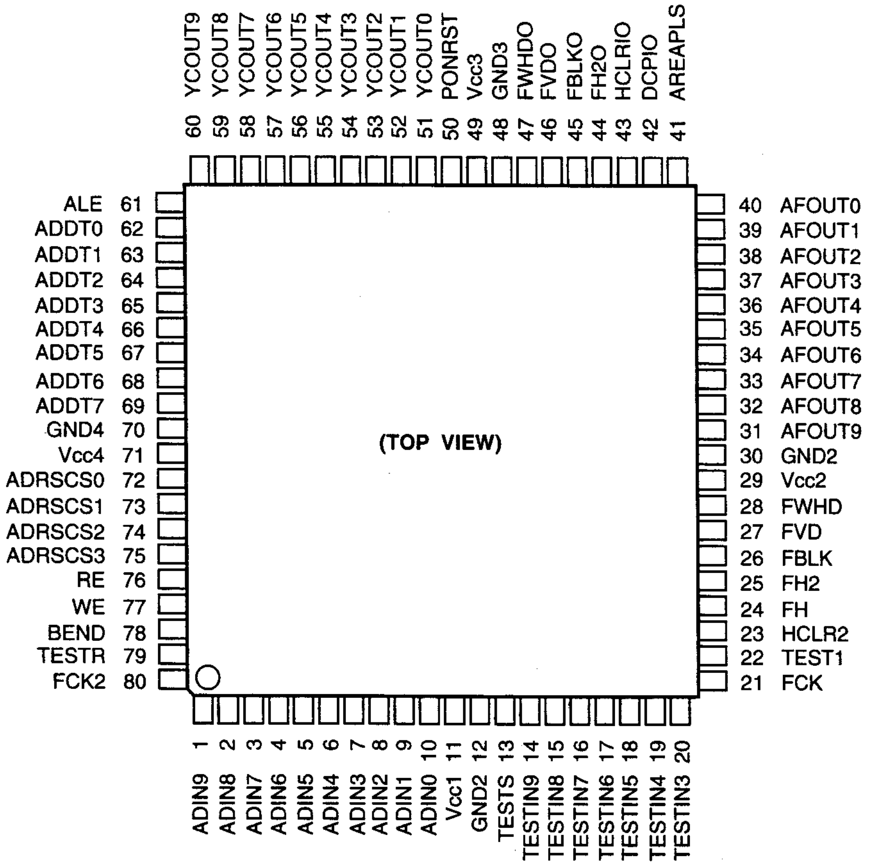
3.4. IC13 on the Main Board is using the Video Out, ALC, Sync Separator IC AN9DE01F. Description of this IC is as follows:


(TOP VIEW)
36 DATA
35 VDD1
34 CIN
33 VREF1
32 LPFO
31 Dcc
30 LPFI
29 VDD2
28 VIDEOO
27 VIDEOF
26 DAVDIN
25 TRAP
SYNCIN 37
SYNCLEV 38
YIN 39
GND1 40
CBLK 41
CP2 42
BFP 43
ALCSW 44
OP+ 45
OP– 46
OPOUT 47
VDD4 48
24 DATA
23 VD2OUT
22 GND2
21 DUMP
20 DRIVE
19 VDD3
18 VREF3
17 GND3
16 OP1O
15 OP1–
14 OP2O
13 OP2–
1 BSD
2 BURSTOUT
3 BIAS
4 BC2
5 BC1
6 SCCONT
7 APFIN
8 AGC
9 VREF4
10 SYNCOUT
11 GLIN
12 GND4

Pin	Name	I/O	Description
1	BSD	O	Burst DC signal output ternial.
2	BURSTOUT	O	Burst signal output terminal.
3	BIAS	I	Bias setting signal input terminal.
4	BC2	I	Burst Carrier input terminal.
5	BC1	O	Burst Carrier output terminal.
6	SCCONT	I	Sub Carrier Control signal input terminal.
7	APFIN	I	Active Pass Filter input terminal.
8	AGC	O	AGC signal output terminal.
9	VREF4	O	Reference Voltage output terminal.
10	SYNCOUT	O	SYNC signal output terminal.
11	GLIN	I	G/L SYNC signal input terminal.
12	GND4	–	Ground terminal.
13	OP2–	I	Ope Amp2 – input terminal.
14	OP2O	O	Ope Amp2 output terminal.
15	OP1–	I	Ope Amp1 – input terminal.
16	OP1O	O	Ope Amp1 output terminal.
17	GND3	–	Ground terminal.
18	VREF3	O	Reference Voltage output terminal.
19	VDD3	–	Power supply terminal.
20	DRIVE	O	ALC signal output terminal.
21	DUMP	I	ALC Dumper signal input terminal.
22	GND2	–	Ground terminal.
23	VD2OUT	O	VD2 signal output terminal.
24	DATA	O	VD2 DATA output terminal.

Pin	Name	I/O	Description
25	TRAP	I	Trap signal input terminal.
26	DAVDIN	I	VD2 DATA input terminal.
27	VIDEOF	I	Video signal input terminal.
28	VIDEOO	O	Video signal output terminal.
29	VDD2	–	Power supply terminal.
30	LPFI	I	Low Pass Filter signal input terminal.
31	Dcc	O	DC Control signal output terminal.
32	LPFO	O	Low Pass Filter signal output terminal.
33	VREF1	O	Reference Voltage output terminal.
34	CIN	I	Chrominance signal input terminal.
35	VDD1	–	Power supply terminal.
36	DATA	I	DATA input terminal.
37	SYNCIN	I	Composite Sync signal input terminal.
38	SYNCLEV	I	Sync Control signal input terminal.
39	YIN	I	Luminance signal input terminal.
40	GND1	–	Ground terminal.
41	CBLK	I	Composite Blanking Pulse input terminal.
42	CP2	I	Clamp Pulse input terminal.
43	BFP	I	Burst Flag Pulse input terminal.
44	ALCSW	I	ALC SW selection signal input terminal.
45	OP+	I	Ope Amp + input terminal.
46	OP–	I	Ope Amp – input terminal.
47	OPOUT	O	Ope Amp output terminal.
48	VDD4	–	Power supply terminal.

3.5. IC4 on the Main Board is using the Y/C Signal Processing, D/A Converter IC MN67353.
Description of this IC is as follows:

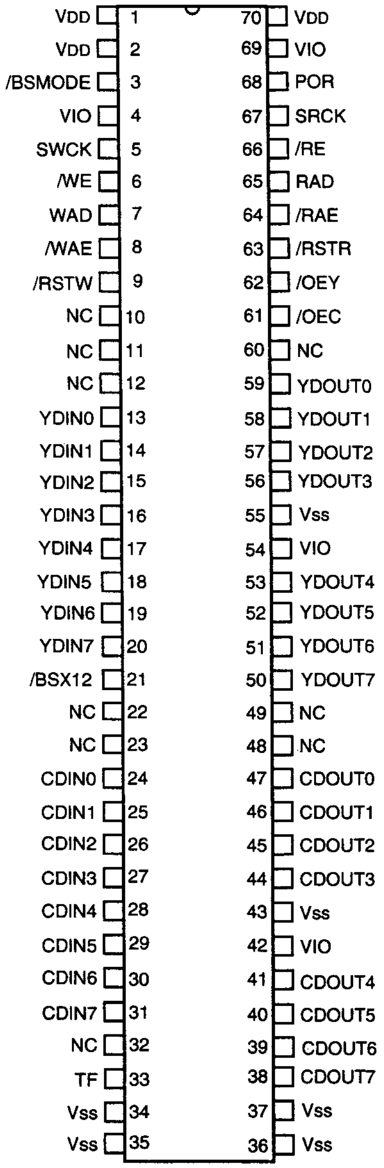

60 YCOUT9
59 YCOUT8
58 YCOUT7
57 YCOUT6
56 YCOUT5
55 YCOUT4
54 YCOUT3
53 YCOUT2
52 YCOUT1
51 YCOUT0
50 PONRST
49 Vcc3
48 GND3
47 FWHDO
46 FVDO
45 FBLKO
44 FH2O
43 HCLRIO
42 DCPIO
41 AREAPLS
ALE 61
ADDT0 62
ADDT1 63
ADDT2 64
ADDT3 65
ADDT4 66
ADDT5 67
ADDT6 68
ADDT7 69
GND4 70
Vcc4 71
ADRSCS0 72
ADRSCS1 73
ADRSCS2 74
ADRSCS3 75
RE 76
WE 77
BEND 78
TESTR 79
FCK2 80
(TOP VIEW)
40 AFOUT0
39 AFOUT1
38 AFOUT2
37 AFOUT3
36 AFOUT4
35 AFOUT5
34 AFOUT6
33 AFOUT7
32 AFOUT8
31 AFOUT9
30 GND2
29 Vcc2
28 FWHD
27 FVD
26 FBLK
25 FH2
24 FH
23 HCLR2
22 TEST1
21 FCK
1 ADIN9
2 ADIN8
3 ADIN7
4 ADIN6
5 ADIN5
6 ADIN4
7 ADIN3
8 ADIN2
9 ADIN1
10 ADIN0
11 Vcc1
12 GND2
13 TESTS
14 TESTIN9
15 TESTIN8
16 TESTIN7
17 TESTIN6
18 TESTIN5
19 TESTIN4
20 TESTIN3

Pin	Name	I/O	Description
1	ADIN9	I	A/D DATA input terminals. (10-Bit)
2	ADIN8	I	
3	ADIN7	I	
4	ADIN6	I	
5	ADIN5	I	
6	ADIN4	I	
7	ADIN3	I	
8	ADIN2	I	
9	ADIN1	I	
10	ADIN0	I	
11	Vcc1	–	Power supply terminal.
12	GND1	–	Ground terminal.
13	TESTS	–	Test terminals.
14	TESTIN9	–	
15	TESTIN8	–	
16	TESTIN7	–	
17	TESTIN6	–	
18	TESTIN5	–	
19	TESTIN4	–	
20	TESTIN3	–	

Pin	Name	I/O	Description
21	FCK	I	Clock Pulse input terminal.
22	TEST1	–	Test terminal.
23	HCLR2	I	øH Clear Pulse input terminal.
24	FH	I	FH Pulse input terminal.
25	FH2	I	1/2FH Pulse input terminal.
26	FBLK	I	Blanking Pulse input terminal.
27	FVD	I	Vertical Drive Pulse input terminal.
28	FWHD	I	Horizontal Drive Pulse input terminal.
29	Vcc2	–	Power supply terminal.
30	GND2	–	Ground terminal.
31	AFOUT9	–	Non connections.
32	AFOUT8	–	
33	AFOUT7	–	
34	AFOUT6	–	
35	AFOUT5	–	
36	AFOUT4	–	
37	AFOUT3	–	
38	AFOUT2	–	
39	AFOUT1	–	
40	AFOUT0	–	

Pin	Name	I/O	Description
41	AREAPLS	O	AREA signal output terminal.
42	DCPIO	O	Digital Clamp Pluse output terminal.
43	HCLRIO	O	øH Clear Pulse output terminal.
44	FH2O	I/O	1/2FH Pulse input/output terminal.
45	FBLKO	–	Non connection
46	FVDO	–	
47	FWHDO	–	
48	GND3	–	Ground terminal.
49	Vcc3	–	Power supply terminal.
50	PONRST	I	Power On Reset signal input terminal.
51	YCOUT0	O	D/A DATA output terminals. (10-Bit)
52	YCOUT1	O	
53	YCOUT2	O	
54	YCOUT3	O	
55	YCOUT4	O	
56	YCOUT5	O	
57	YCOUT6	O	
58	YCOUT7	O	
59	YCOUT8	O	
60	YCOUT9	O	
61	ALE	I	Address Latch Enable signal input terminal.
62	ADDT0	I/O	DATA Bus terminals.(8-Bit)
63	ADDT1	I/O	
64	ADDT2	I/O	
65	ADDT3	I/O	
66	ADDT4	I/O	
67	ADDT5	I/O	
68	ADDT6	I/O	
69	ADDT7	I/O	
70	GND4	–	Ground terminal.
71	Vcc4	–	Power supply terminal.
72	ADRSCS0	O	Address signal output terminals.
73	ADRSCS1	O	
74	ADRSCS2	O	
75	ADRSCS3	O	
76	RE	I	Read Enable signal input terminal.
77	WE	I	Write Enable signal input terminal.
78	BEND	–	Non connection.
79	TESTR	–	Test terminal.
80	FCK2	I	Clock Pulse input terminal.

3.6. IC8 on the Main Board is using the Memory for X32 Electric Gain Up IC YWZA4035H.
Description of this IC is as follows:
(for WV-CP650 and WV-CP654)

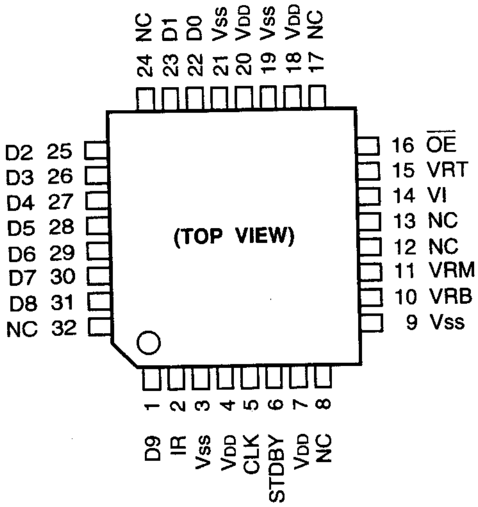

VDD 1 70 VDD
VDD 2 69 VIO
/BSMODE 3 68 POR
VIO 4 67 SRCK
SWCK 5 66 /RE
/WE 6 65 RAD
WAD 7 64 /RAE
/WAE 8 63 /RSTR
/RSTW 9 62 /OEY
NC 10 61 /OEC
NC 11 60 NC
NC 12 59 YDOUT0
YDIN0 13 58 YDOUT1
YDIN1 14 57 YDOUT2
YDIN2 15 56 YDOUT3
YDIN3 16 55 Vss
YDIN4 17 54 VIO
YDIN5 18 53 YDOUT4
YDIN6 19 52 YDOUT5
YDIN7 20 51 YDOUT6
/BSX12 21 50 YDOUT7
NC 22 49 NC
NC 23 48 NC
CDIN0 24 47 CDOUT0
CDIN1 25 46 CDOUT1
CDIN2 26 45 CDOUT2
CDIN3 27 44 CDOUT3
CDIN4 28 43 Vss
CDIN5 29 42 VIO
CDIN6 30 41 CDOUT4
CDIN7 31 40 CDOUT5
NC 32 39 CDOUT6
TF 33 38 CDOUT7
Vss 34 37 Vss
Vss 35 36 Vss

(TOP VIEW)

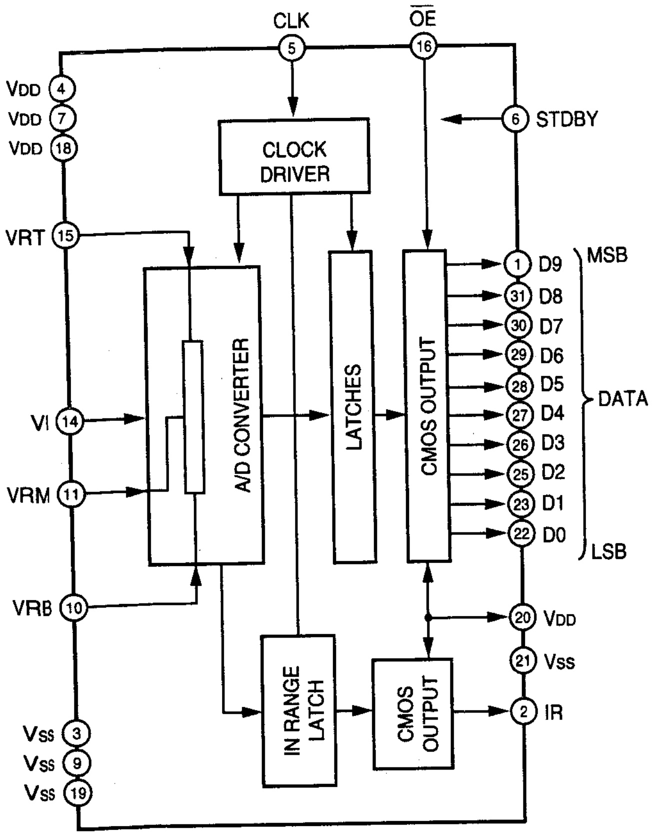
Pin	Name	I/O	Description
1	VDD	–	Power supply terminals.
2	VDD	–	
3	/BSMODE	I	Boundary Scan Mode (x16 mode) terminal.
4	VIO	–	Power supply terminal.
5	SWCK	I	Write Serial Clock Pulse input terminal.
6	/WE	I	Write Enable signal input terminal.
7	WAD	I	Write Address signal input terminal.
8	/WAE	I	Write Address Enable signal input terminal.
9	/RSTW	I	Write Reset Pulse input terminal.
10	NC	–	Non connections.
11	NC	–	
12	NC	–	
13	YDIN0	I	Luminance DATA (x16 mode) input terminals.(8-Bit)
14	YDIN1	I	
15	YDIN2	I	
16	YDIN3	I	
17	YDIN4	I	
18	YDIN5	I	
19	YDIN6	I	
20	YDIN7	I	
21	/BSX12	I	Boundary Scan Mode (x12 mode) terminal.
22	NC	–	Non Connection.
23	NC	–	
24	CDIN0	I	Chrominance DATA (x16 mode) input terminals.(8-Bit)
25	CDIN1	I	
26	CDIN2	I	
27	CDIN3	I	
28	CDIN4	I	
29	CDIN5	I	
30	CDIN6	I	
31	CDIN7	I	
32	NC	–	Non Connection.
33	TF	–	Test terminal.
34	Vss	–	Ground terminals.
35	Vss	–	

Pin	Name	I/O	Description
36	Vss	–	Ground terminal.
37	Vss	–	
38	CDOUT7	O	Chrominance DATA (x16 mode) output terminals.(8-Bit)
39	CDOUT6	O	
40	CDOUT5	O	
41	CDOUT4	O	
42	VIO	–	Power supply terminal .
43	Vss	–	Ground terminal.
44	CDOUT3	O	Chrominance DATA (x16 mode) output terminals.(8-Bit)
45	CDOUT2	O	
46	CDOUT1	O	
47	CDOUT0	O	
48	NC	–	Non connection.
49	NC	–	
50	YDOUT7	O	Luminance DATA (x16 mode) output terminals.(8-Bit)
51	YDOUT6	O	
52	YDOUT5	O	
53	YDOUT4	O	
54	VIO	I	Power supply terminal.
55	Vss	–	Ground terminal.
56	YDOUT3	O	Luminance DATA (x16 mode) output terminals.(8-Bit)
57	YDOUT2	O	
58	YDOUT1	O	
59	YDOUT0	O	
60	NC	–	Non connection.
61	/OEC	O	C/Y Output Enable terminals. (x16 mode)
62	/OEY	O	
63	/RSTR	I	Read Reset Pulse input terminal.
64	/RAE	I	Read Address Enable signal input terminal.
65	RAD	I	Read Address signal input terminal.
66	/RE	I	Read Enable signal input terminal.
67	SRCK	I	Read Serial Clock Pulse input terminal.
68	POR	I	Power On Reset signal terminal.
69	VIO	–	Power supply terminal.
70	VDD	–	Power supply terminal.

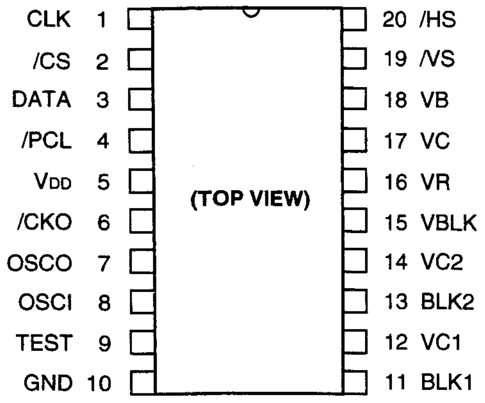
3.7. IC15 on the Main Board is using the 10-Bit A/D Converter IC YWTDA8766GCS.
Description of this IC is as follows:


24 NC
23 D1
22 D0
21 Vss
20 VDD
19 Vss
18 VDD
17 NC
D2 25
D3 26
D4 27
D5 28
D6 29
D7 30
D8 31
NC 32
(TOP VIEW)
16 OE
15 VRT
14 VI
13 NC
12 NC
11 VRM
10 VRB
9 Vss
1 D9
2 IR
3 Vss
4 VDD
5 CLK
6 STDBY
7 VDD
8 NC

Pin	Name	I/O	Description
1	D9	O	DATA output terminal. (bit 9) (MSB)
2	IR	I	In Range DATA input terminal.
3	Vss	–	Ground terminal.
4	VDD	–	Power supply terminal.
5	CLK	I	Clock Pulse intput terminal.
6	STDBY	I	Standby mode signal input terminal.
7	VDD	–	Power supply terminal.
8	NC	–	Non connection.
9	Vss	–	Ground terminal.
10	VRB	I	Reference Bottom Voltage intput terminal.
11	VRM	I	Reference Middle Voltage intput terminal.
12	NC	–	Non connections.
13	NC	–	
14	VI	I	Analog signal input terminal.
15	VRT	I	Reference Top Voltage intput terminal.
16	OE	I	Output Enable signal input terminal.
17	NC	–	Non connection.
18	VDD	–	Power supply terminal.
19	Vss	–	Ground terminal.
20	VDD	–	Power supply terminal.
21	Vss	–	Ground terminal.
22	D0	O	DATA output terminal. (bit 0) (LSB)
23	D1	O	DATA output terminal. (bit 1)
24	NC	O	Non connection.
25	D2	O	DATA output terminal. (bit 2)
26	D3	O	DATA output terminal. (bit 3)
27	D4	O	DATA output terminal. (bit 4)
28	D5	O	DATA output terminal. (bit 5)
29	D6	O	DATA output terminal. (bit 6)
30	D7	O	DATA output terminal. (bit 7)
31	D8	O	DATA output terminal. (bit 8)
32	NC	–	Non connection.

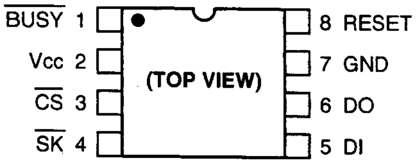

CLK
5
OE
16
VDD 4
VDD 7
VDD 18
6 STDBY
CLOCK DRIVER
VRT 15
VI 14
VRM 11
VRB 10
A/D CONVERTER
LATCHES
CMOS OUTPUT
1 D9
31 D8
30 D7
29 D6
28 D5
27 D4
26 D3
25 D2
23 D1
22 D0
MSB
DATA
LSB
20 VDD
21 Vss
2 IR
IN RANGE LATCH
CMOS OUTPUT
Vss 3
Vss 9
Vss 19

3.8. IC9 on the Main Board is using the Character Generator IC YWD6462GS905.
Description of this IC is as follows:

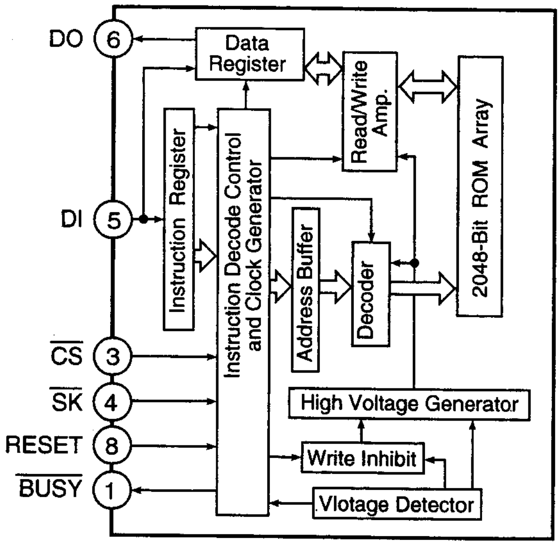

CLK 1
/CS 2
DATA 3
/PCL 4
VDD 5
/CKO 6
OSCO 7
OSCI 8
TEST 9
GND 10
20 /HS
19 /VS
18 VB
17 VC
16 VR
15 VBLK
14 VC2
13 BLK2
12 VC1
11 BLK1
(TOP VIEW)

Pin	Name	I/O	Description
1	CLK	I	Clock Pulse input terminal.
2	/CS	I	Chip Select Signal input terminal.
3	DATA	O	DATA output terminal.
4	/PCL	I	Reset Pulse input terminal.
5	VDD	–	Power supply terminal.
6	/CKO	–	Non connection.
7	OSCO	–	
8	OSCI	I	U/V Select signal input terminal.
9	TEST	–	Test terminal.
10	GND	–	Ground terminal.
11	BLK1	–	Non connection.
12	VC1	–	
13	BLK2	–	
14	VC2	O	Character signal output terminal.
15	VBLK	–	Non connection.
16	VR	–	
17	VC	–	
18	VB	O	Character signal output terminal.
19	/VS	I	Vertical Drive Pulse input terminal.
20	/HS	I	1/2FH Pulse input terminal.

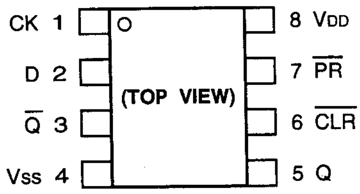
3.9. IC3 on the Main Board is using the 4K-Bit EEPROM IC YWBR9040FT1.
Description of this IC is as follows:


BUSY 1
Vcc 2
CS 3
SK 4
8 RESET
7 GND
6 DO
5 DI
(TOP VIEW)

Pin	Name	I/O	Description
1	$\overline{\text{BUSY}}$	O	Busy Status signal output terminal.
2	Vcc	–	Power supply terminal.
3	$\overline{\text{CS}}$	I	Chip Select signal input terminal.
4	$\overline{\text{SK}}$	I	Serial Data Clock Pulse input terminal.
5	DI	I	Serial Data input terminal.
6	DO	O	Serial Data output terminal.
7	GND	–	Ground terminal.
8	RESET	I	Reset Pulse input terminal.


DO 6
DI 5
CS 3
SK 4
RESET 8
BUSY 1
Data Register
Read/Write Amp.
2048-Bit ROM Array
Instruction Register
Instruction Decode Control and Clock Generator
Address Buffer
Decoder
High Voltage Generator
Write Inhibit
Vlotage Detector

3.10. IC25 on the Main Board is using the Single D-FF with Preset and Clear IC YWTC7W74F.
Description of this IC is as follows:

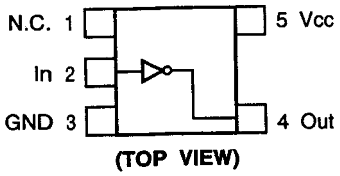

CK 1
D 2
$\overline{Q}$ 3
Vss 4
(TOP VIEW)
8 VDD
7 $\overline{PR}$
6 $\overline{CLR}$
5 Q

Truth Table

INPUTS				OUTPUTS		Function
$\overline{CLR}$	$\overline{PR}$	D	CK	Q	$\overline{Q}$	
L	H	*	*	L	H	Clear
H	L	*	*	H	L	Preset
L	L	*	*	H	H	——
H	H	L	↑	L	H	——
H	H	H	↑	H	L	——
H	H	*	↓	Qn	$\overline{Qn}$	No Change

* : Don't care.

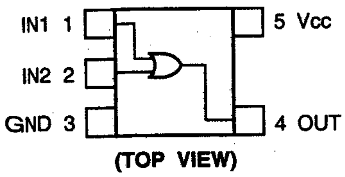
3.11. IC11 and 12 on the Main Board is using the Single Inverter IC YWTC7S04F.
Description of this IC is as follows:


N.C. 1
In 2
GND 3
5 Vcc
4 Out
(TOP VIEW)

Truth Table

Input	Output
L	H
H	L

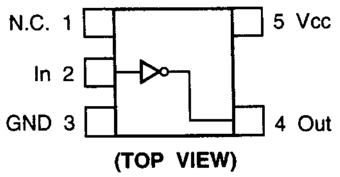
3.12. IC17, 18 and 19 on the Main Board is using the Single 2-Input OR Gate IC YWTC7S32F.
Description of this IC is as follows:


IN1 1
IN2 2
GND 3
5 Vcc
4 OUT
(TOP VIEW)

Truth Table

Inputs		Output
IN1	IN2	
L	L	L
H	L	H
L	H	H
H	H	H

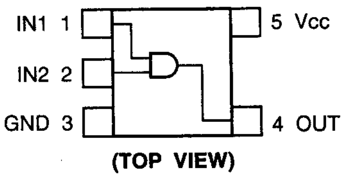
3.13. IC20 and 23 on the Main Board is using the Single Inverter IC YWTC7S04FUL.
Description of this IC is as follows:


N.C. 1
In 2
GND 3
5 Vcc
4 Out
(TOP VIEW)

Truth Table

Input	Output
L	H
H	L

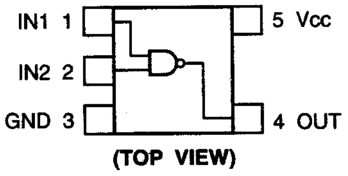
3.14. IC21 and 22 on the Main Board is using the Single 2-Input AND Gate IC YWTC7S08FUL.
Description of this IC is as follows:


IN1 1
IN2 2
GND 3
5 Vcc
4 OUT
(TOP VIEW)

Truth Table

Inputs		Output
IN1	IN2	
L	L	L
H	L	L
L	H	L
H	H	H

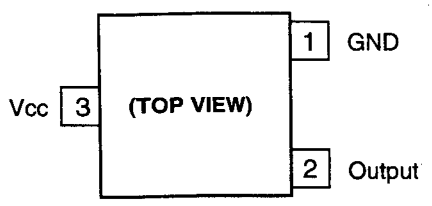
3.15. IC24 on the Main Board is using the Single 2-Input NAND Gate IC TC7S00FUL.
Description of this IC is as follows:

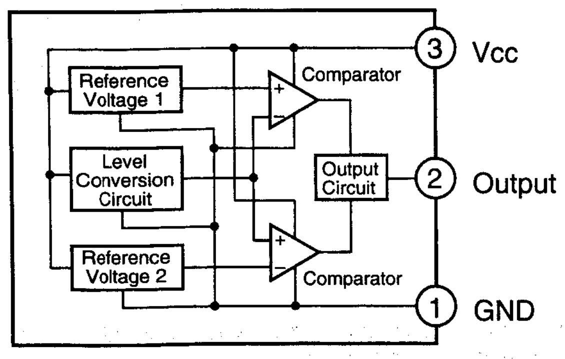

IN1 1
IN2 2
GND 3
5 Vcc
4 OUT
(TOP VIEW)

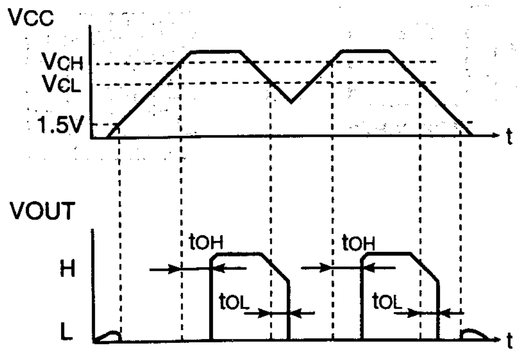
Truth Table

Inputs		Output
IN1	IN2	
L	L	H
H	L	H
L	H	H
H	H	L

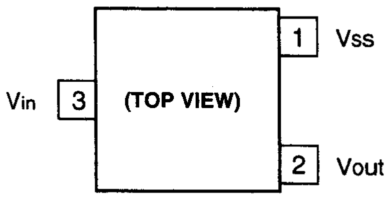
3.16. IC2 on the Main Board is using the 3.5V Reset IC MN13821.
Description of this IC is as follows:

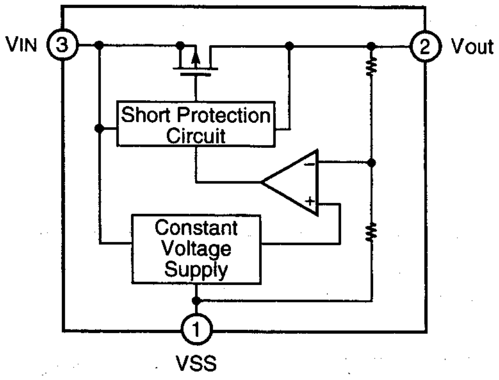

GND
Vcc
3
(TOP VIEW)
1
2
Output


Reference Voltage 1
Level Conversion Circuit
Reference Voltage 2
Comparator
Output Circuit
Comparator
3
Vcc
2
Output
1
GND



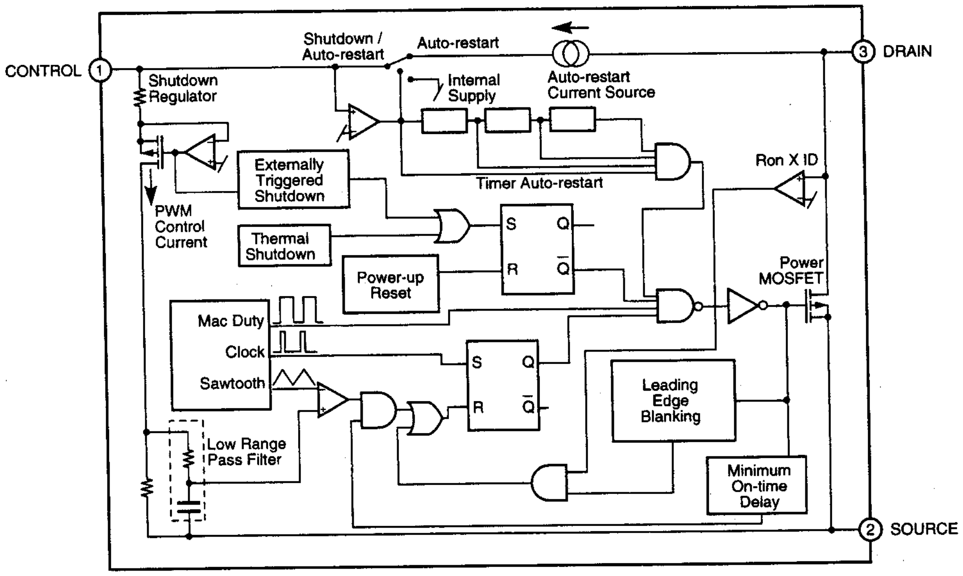
3.17. IC26 on the Main Board is using the +5V Regulator IC XC62AP4702M.
Description of this IC is as follows:


Vin
3
(TOP VIEW)
1
Vss
2
Vout


VIN
3
2
Vout
Short Protection Circuit
Constant Voltage Supply
1
VSS

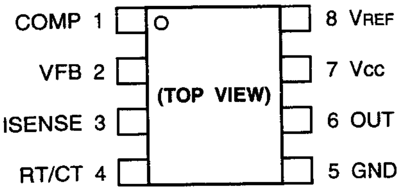
4. Power Board (for WV-CP450 and WV-CP650)

4.1. IC1 on the Power Board is using the Switching Regulator IC MIP160.
Description of this IC is as follows:

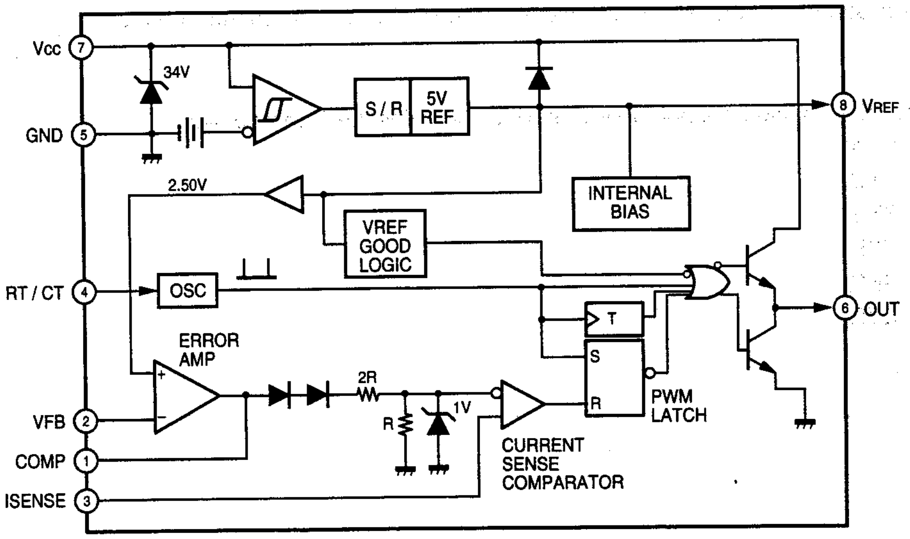

CONTROL ①
Shutdown / Auto-restart
Auto-restart
③ DRAIN
Shutdown Regulator
Internal Supply
Auto-restart Current Source
Externally Triggered Shutdown
PWM Control Current
Timer Auto-restart
Ron X ID
Thermal Shutdown
S Q
R Q̄
Power-up Reset
Power MOSFET
Mac Duty
Clock
Sawtooth
S Q
R Q̄
Leading Edge Blanking
Low Range Pass Filter
Minimum On-time Delay
② SOURCE

5. Power Board (for WV-CP454 and WV-CP654)

5.1. IC1 on the Power Board is using the Switching Regulator IC YWUC2843NU.
Description of this IC is as follows:


COMP 1
VFB 2
ISENSE 3
RT/CT 4
(TOP VIEW)
8 VREF
7 Vcc
6 OUT
5 GND

Pin	Name	I/O	Description
1	COMP	I	Comparator input terminal.
2	VFB	I	Error Amp – input terminal.
3	ISENSE	I	Current Sense input terminal.
4	RT/CT	–	Timing Resistor / Timing Capacitor connecting terminal.
5	GND	–	Ground terminal.
6	OUT	O	Signal output terminal.
7	Vcc	–	Power supply terminal.
8	VREF	O	Reference Voltage output terminal.


Vcc ⑦
34V
GND ⑤
S / R
5V REF
⑧ VREF
2.50V
INTERNAL BIAS
VREF GOOD LOGIC
RT / CT ④
OSC
T
⑥ OUT
ERROR AMP
S
R
PWM LATCH
2R
R
1V
VFB ②
COMP ①
ISENSE ③
CURRENT SENSE COMPARATOR

ABOUT YOUR COMPUTER

In order to run the E.V.R. (Electric Variable Resistor) adjustment program your IBM-PC/AT Type or compatible must meet the following requirements:

- The DOS Operating System must be 3.3 or higher.
- The Operating System must be 100% compatible with your computer.
- The memory in your IBM-PC must be at least 640k-bytes, and 512k-bytes shall be available to the E.V.R. adjustment program.

Installing E.V.R. Adjustment Program

- The Example given here is for A 2 drive computer, your procedure might vary slightly depending on drive configuration.
- Formatting new disk and making a copy of DOS Operating System.

  a) Insert disk containing DOS operating system into your floppy drive (for example, drive A) and type **A:**
  b) Insert new disk into your floppy drive (for example, drive B).
  c) Format and make a copy of DOS operating system from your original disk to new disk by typing **FORMAT B:/S** and press the **ENTER** key.
  d) Type **COPY ANSI. SYS B:** and press the **ENTER** key.

- Install E.V.R. Adjustment Program onto formatted new disk with DOS operating system.

  FOR WV-CP650

  e) Take out original disk containing DOS operating system from your floppy drive (drive A) and insert disk containing E.V.R. adjustment program into your floppy drive (drive A) and type **A:**
  f) At the prompt, type **CD IBMPC** and press the **ENTER** key .
  g) If required, type **COPY CONFIG.SYS B:** and press the **ENTER** key.
  h) Type **CD PAL** for PAL.
  i) Type **COPY ADJ3E . EXE B:** and press the **ENTER** key.
  j) Type **CD** and press the **ENTER** key.
  k) Type **CD SEQ** and press the **ENTER** key.
  l) Type **COPY CP650E. SEQ B:** and press the **ENTER** Key.
  m) Type **CD** and press the **ENTER** key.
  n) Type **CD EVR** and press the **ENTER** key.
  o) Type **COPY CP650E. EVR B:** and press the **ENTER** key.
  p) After completing installation of program, you are ready to use the E.V.R. adjustment program.

Note:

When completed the new disk should be a bootable disk which contains the following files:

1.	COMMAND	COM
2.	ANSI	SYS
3.	CONFIG	SYS
4.	ADJ3E	EXE
5.	CP650E	SEQ
6.	CP650E	EVR

ADJUSTMENT PROCEDURE

1. Test Equipment Required

The following test Equipment are required for adjustment of the Colour CCTV Camera WV-CP450, WV-CP454, WV-CP650 and WV-CP654.

- Oscilloscope
- Frequency Counter
- Digital Voltmeter
- Vectorscope
- Waveform Monitor
- Underscanned Colour Video Monitor
- Video Signal Generator
- 12 V DC Power Supply Unit
- Lux Meter
- Lighting (275 footcandles (2,750 ± 150 lux), Colour Temperature 5,100 ± 100 K)
- Personal Computer (IBM PC/AT type or equivalent)
- Standard Straight RS-232C Cable
- ALC Lens (WV-LA9C3A, WV-LA12 or equivalent)
- Manual Iris Lens
- Colour Temperature Conversion Filters (KENKO : W12, C4, C12 or equivalent)
- ND8 Filter
- White Chart or White Paper
- Radiation Chart
- Logarithmic Gray Scale Chart as shown Fig. 1-1. (Part Number:YWV2310RB99)

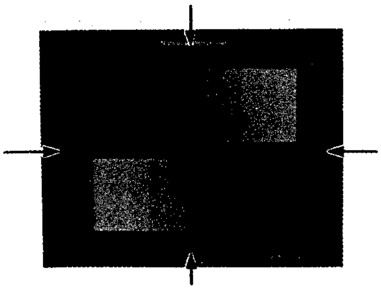


Fig. 1-1

- Colour Chip Chart as shown in Fig. 1-2. (Part Number: YWV2100RB98)

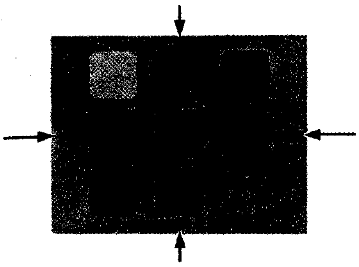


Fig. 1-2

- Extension Cable as shown in Fig. 1-3. (Part Number: YWV0EA1171AN)

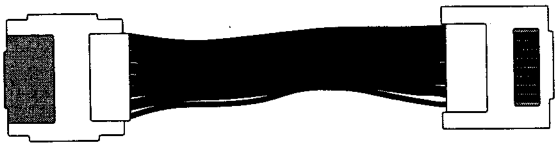


Fig. 1-3

- Electric Variable Resistor (E. V. R.) kit as shown in Fig. 1-4. (Part Number: YWV0EA1174AN)

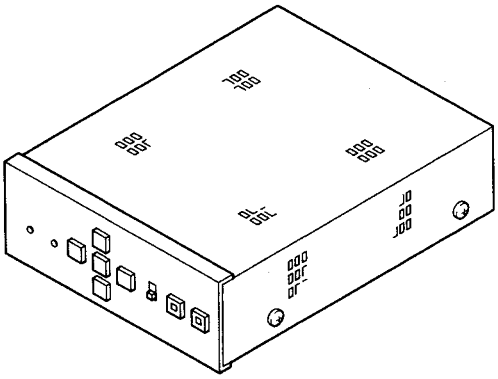


Fig. 1-4

- Make a conversion cable as follows.

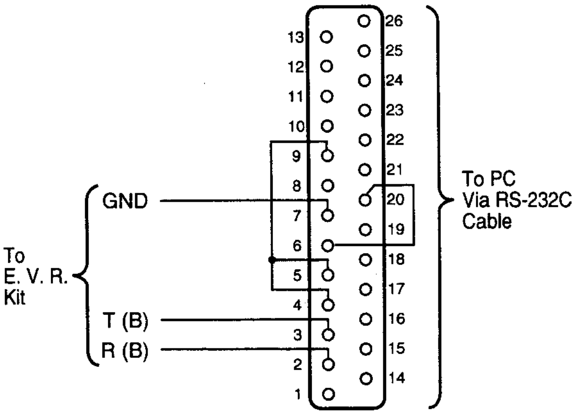


Fig. 1-5

2. Disassembling Procedure for Adjustment

- Referring to Fig. 2-1, remove two screws that secure the Camera Mounting Adaptor and remove the Camera Mounting Adaptor.

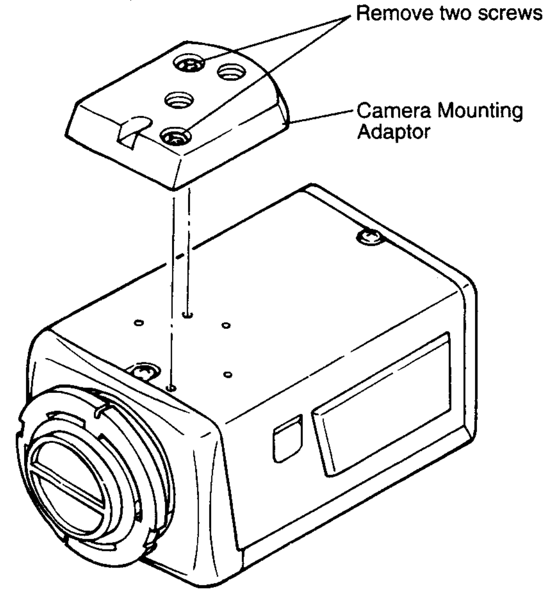

Remove two screws
Camera Mounting Adaptor

Fig. 2-1

- Referring to Fig. 2-2, remove two screws that secure the Cover and remove the Cover.

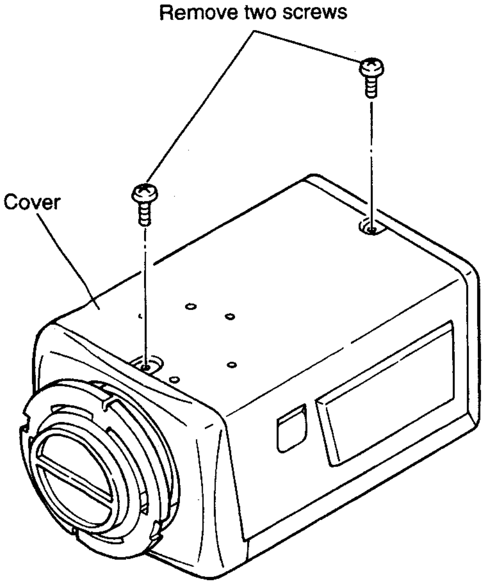

Remove two screws
Cover

Fig. 2-2

- Referring to Fig. 2-3, remove one screw that secure the Rear Escutcheon and Rear Panel remove the Rear Escutcheon and Rear Panel.

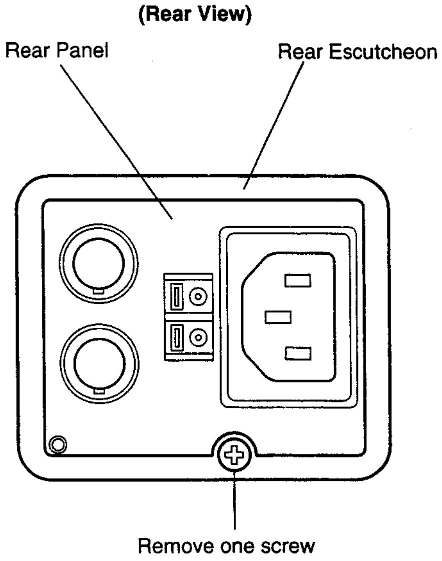

(Rear View)
Rear Panel
Rear Escutcheon
Remove one screw

Fig. 2-3

- Referring to Fig. 2-4, remove one screw that secure the Front Escutcheon Unit.

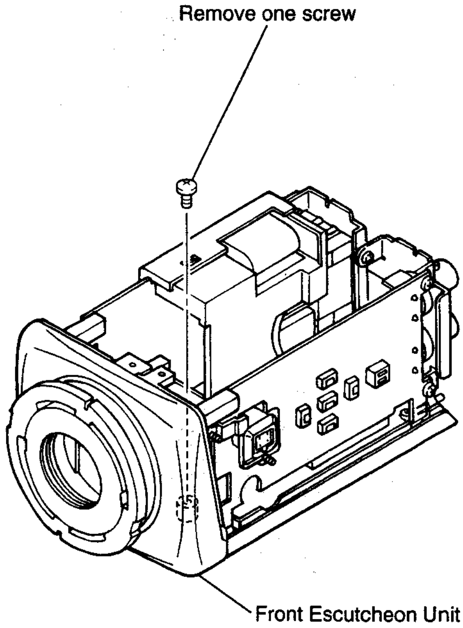

Remove one screw
Front Escutcheon Unit

Fig. 2-4

- Referring to Fig. 2-5, disconnect the connector CN2 on the Main Board that secure the I/F Board and Alarm Board and remove the I/F Board and Alarm Board.
- Remove one screw that secure the Earth Lug and Washer and remove the Earth Lug and Washer (For WV-CP450 and WV-CP650 only).
- Disconnect the connector CN4 on the Main Board and remove the Power Board.
- Remove four screws that secure the Main Board and remove the Main Board from the Chassis.

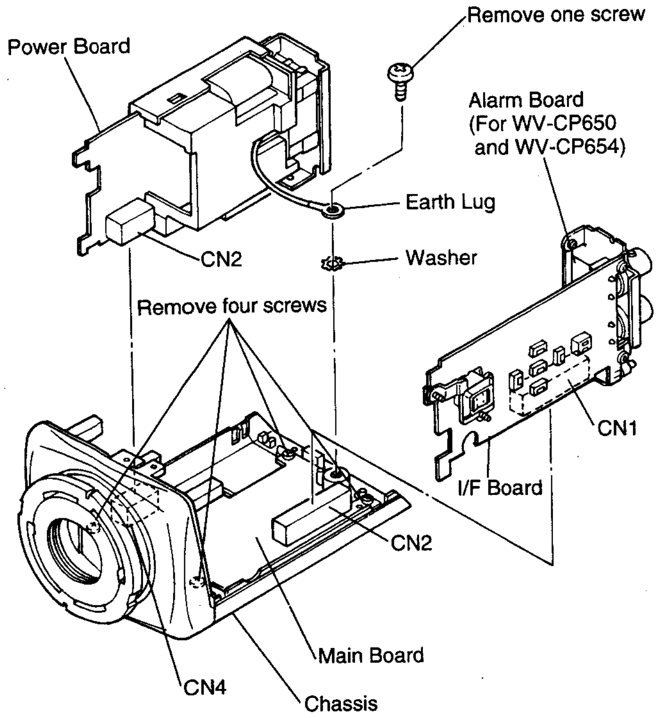

Remove one screw
Power Board
Alarm Board
(For WV-CP650
and WV-CP654)
Earth Lug
CN2
Washer
Remove four screws
CN1
I/F Board
CN2
Main Board
CN4
Chassis

Fig. 2-5

- Reconnect the Extension Cable, between CN4 on the Main Board and CN2 on the Power Board for Adjustment.
- Reconnect the Main Board and I/F Board.

3. Head Optical Ass'y Replacement Procedure

- Disassemble the Camera while referring to the **2. Disassebling Procedure for Adjustment**.
- Referring to Fig. 3-1, remove two screws that secure the Core Mother Board on the Front Escutcheon Unit and remove the Head Optical Ass'y on the Front Escutcheon Unit.
- Replace Head Optical Ass'y with new one.

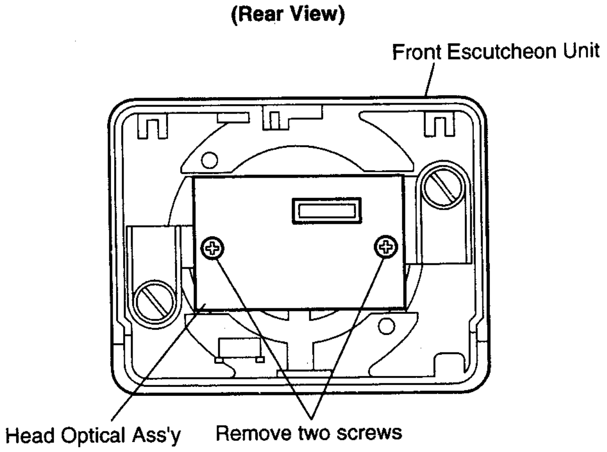

(Rear View)
Front Escutcheon Unit
Head Optical Ass'y
Remove two screws

Fig. 3-1

4. Connection and Setting Up for Adjustment

4.1. Connection

- The Fig. 4-1 shows the connecting diagram for the adjustment procedure.

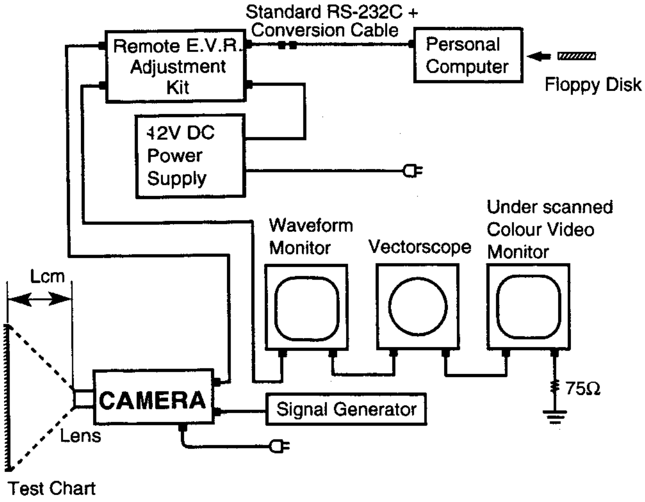

Standard RS-232C + Conversion Cable
Remote E.V.R. Adjustment Kit
Personal Computer
Floppy Disk
12V DC Power Supply
Under scanned Colour Video Monitor
Waveform Monitor
Vectorscope
Lcm
CAMERA
Lens
Signal Generator
75Ω
Test Chart

Fig. 4-1

- Connect the Underscanned Colour Video Monitor through the E.V.R. Kit, Waveform Monitor and Vectorscope to the Video Output Connector on the Rear Panel of the WV-CP450, WV-CP454, WV-CP650 or WV-CP654 using the coaxial cable.
- Terminate the input terminal of the Underscanned Colour Video Monitor with 75Ω.
- **For the WV-CP454 and WV-CP654,**
  Connect the AC or DC power Units to the AC/DC Compatible Input Terminal on the Rear Panel of the WV-CP454 and WV-CP654.
- Connect the probe of the Digital Voltmeter, Oscilloscope or Frequency Counter at the desired Test Point each adjustment step.

4.2. Initial Position of the Switch for Adjustment

- An initial setting of the Switch on the Left side Panel of the WV-CP450, WV-CP454, WV-CP650 and WV-CP654 as follows:
  Gen-Lock Termination Switch
  (G/L 75Ω/Hi-Z) 75Ω
- The adjustments should be done with this initial setting, unless otherwise specified.

4.3. Setting Up for Standard Picture

- The adjustment should be done after 10 minutes warmup.
- Set the Logarithmic Gray Scale Chart.
- Mount the ALC Lens WV-LA12 on the Camera.
- Incident light of 2,750 ± 150 lux on the Logarithmic Gray Scale Chart.
- Aim the Camera at the Logarithmic Gray Scale Chart.
- Set the Camera so that the Logarithmic Gray Scale Chart becomes full picture on the Underscanned Colour Monitor.
- Adjust the Lens Focus to obtain correct focal point.

5. Adjustment Procedure

- Refer to the Location of the Test Points and Adjusting Controls on the page 41.

■ Adjustment Procedure-1

1. Flange-back Adjustment

Test Point: **CN5 (Video Output Connector)** **I/F Board**
Adjust: **Flange-back Adjusting Ring**

- Mount the ALC Lens WV-LA12 on the Camera.
- Set the Radiation Chart.
- Aim the Camera at the Radiation Chart distance of 10m.
- Set the Lens Foucs Ring so that the Lens Foucs becomes approx. 9mm in front from infinity.
- Referring to Fig. 5-1, loosen two screws that secure the Flange-back Adjusting Ring.
- Adjust the Flange-back Adjusting Ring to obtain best focal point.

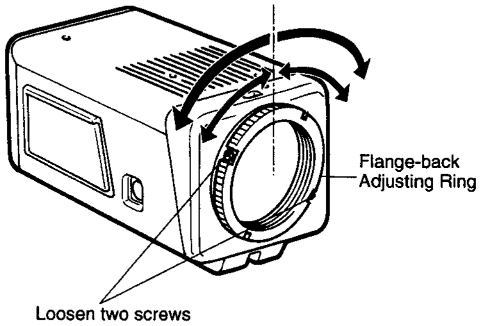
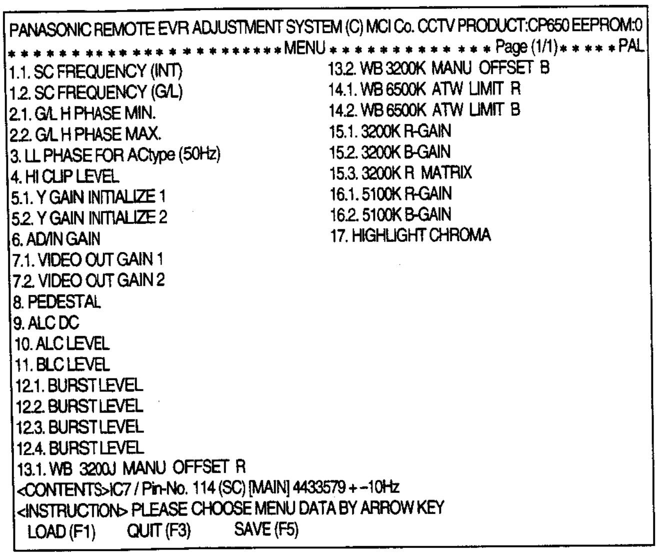

Flange-back Adjusting Ring
Loosen two screws

Fig. 5-1

- Tighten two screws that secure the Flange-back Adjusting Ring carefully.
- Change the ALC Lens to WV-LA9C3A from WV-LA12.

■ Adjustment Procedure-2 (E.V.R. Adjustment)

- Insert new disk containing DOS Operating System and the E.V.R. Adjustment program into IBM PC/AT and turns on the Power Switch of IBM PC/AT.
- At the prompt, type **ADJ3E CP650E** and press the **ENTER** key, an initial menu will be displayed in Table 5-1.



```
PANASONIC REMOTE EVR ADJUSTMENT SYSTEM (C) MCI Co. CCTV PRODUCT:CP650 EEPROM:0
* * * * * * * * * * * * * * * * * * * * * * * * MENU * * * * * * * * * * * * * * Page (1/1) * * * * * PAL
1.1. SC FREQUENCY (INT)              13.2. WB 3200K MANU OFFSET B
1.2. SC FREQUENCY (G/L)              14.1. WB 6500K ATW LIMIT R
2.1. G/L H PHASE MIN.                14.2. WB 6500K ATW LIMIT B
2.2. G/L H PHASE MAX.                15.1. 3200K R-GAIN
3. LL PHASE FOR ACtype (50Hz)        15.2. 3200K B-GAIN
4. HI CLIP LEVEL                     15.3. 3200K R MATRIX
5.1. Y GAIN INITIALIZE 1             16.1. 5100K R-GAIN
5.2. Y GAIN INITIALIZE 2             16.2. 5100K B-GAIN
6. AD/IN GAIN                        17. HIGHLIGHT CHROMA
7.1. VIDEO OUT GAIN 1
7.2. VIDEO OUT GAIN 2
8. PEDESTAL
9. ALC DC
10. ALC LEVEL
11. BLC LEVEL
12.1. BURST LEVEL
12.2. BURST LEVEL
12.3. BURST LEVEL
12.4. BURST LEVEL
13.1. WB 3200J MANU OFFSET R
<CONTENTS>IC7 / Pin-No. 114 (SC) [MAIN] 4433579 + -10Hz
<INSTRUCTION> PLEASE CHOOSE MENU DATA BY ARROW KEY
 LOAD (F1)     QUIT (F3)      SAVE (F5)
```

Table 5-1

- Press the **SAVE(F5)** key of the Computer, then the Computer will ask you for the file name.
- Give appropriate file name to the Computer. But do not use **CP650E.EVR** for your file.
- This saving procedure is recommended to keep the current adjustment status of the Camera.
- Press the **LOAD(F1)** key and type **CP650E.EVR** and press the **ENTER** key for presetting adjustment of the Camera.

Notes:

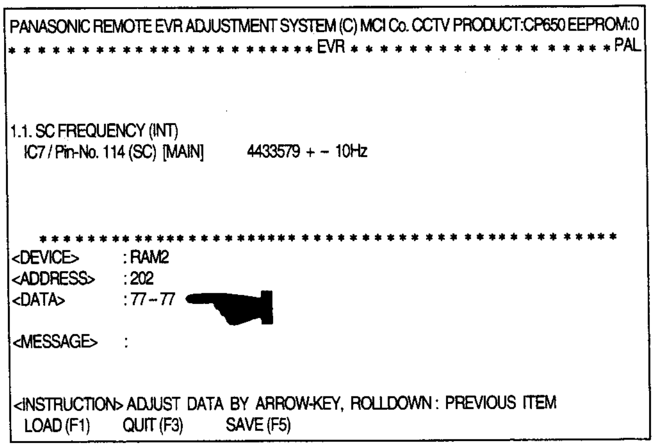
- EEPROM mentioned in this adjustment procedure is IC3 on the Main Board.
- RAM mentioned in this adjustment procedure is IC1 on the Main Board.

1.1. Subcarrier Frequency (INT) Adjustment

Test Point: **Pin 114 of IC7 (SC)** **Main Board**

Adjust: **RAM2 (202)** **Main Board**

- The menu as shown in Table 5-2 will be displayed.



```
PANASONIC REMOTE EVR ADJUSTMENT SYSTEM (C) MCI Co. CCTV PRODUCT:CP650 EEPROM:0
* * * * * * * * * * * * * * * * * * * * * * * * * EVR * * * * * * * * * * * * * * * * * * * * PAL


1.1. SC FREQUENCY (INT)
  IC7 / Pin-No. 114 (SC) [MAIN]        4433579 + - 10Hz


   * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
<DEVICE>      : RAM2
<ADDRESS>     : 202
<DATA>        : 77 - 77

<MESSAGE>     :

<INSTRUCTION> ADJUST DATA BY ARROW-KEY, ROLLDOWN : PREVIOUS ITEM
 LOAD (F1)     QUIT (F3)      SAVE (F5)
```

Table 5-2

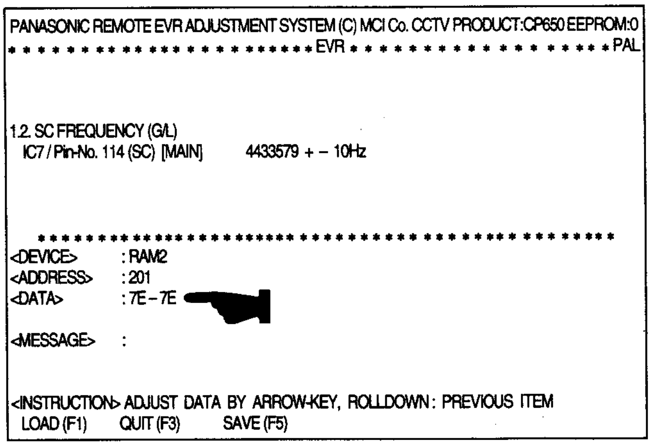
- Connect the Frequency Counter to Pin Number 114 of IC7.
- Adjust data with the **ARROW** keys so that the Subcarrier Frequency becomes 4.433579 MHz ± 10 Hz.
- Press the **ENTER** key for next adjustment.

1.2. Subcarrier Frequency (G/L) Adjustment

Test Point: **Pin 114 of IC7 (SC)** **Main Board**

Adjust: **RAM2 (201)** **Main Board**

- The menu as shown in Table 5-3 will be displayed.



```
PANASONIC REMOTE EVR ADJUSTMENT SYSTEM (C) MCI Co. CCTV PRODUCT:CP650 EEPROM:0
* * * * * * * * * * * * * * * * * * * * * * * * * EVR * * * * * * * * * * * * * * * * * * * * PAL


1.2. SC FREQUENCY (G/L)
  IC7 / Pin-No. 114 (SC) [MAIN]        4433579 + - 10Hz


   * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
<DEVICE>      : RAM2
<ADDRESS>     : 201
<DATA>        : 7E - 7E

<MESSAGE>     :

<INSTRUCTION> ADJUST DATA BY ARROW-KEY, ROLLDOWN : PREVIOUS ITEM
 LOAD (F1)     QUIT (F3)      SAVE (F5)
```

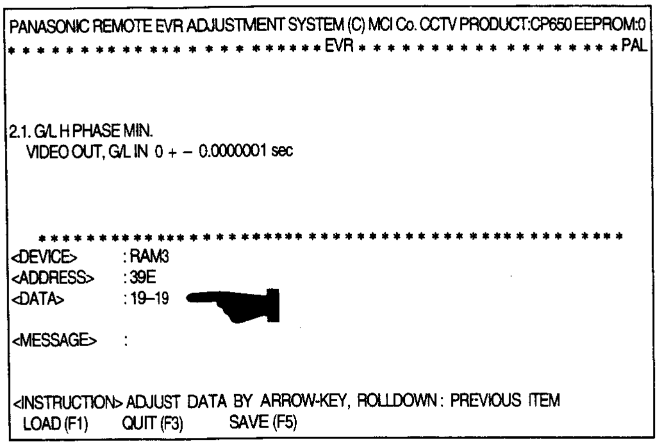
Table 5-3

- Supply the Composite Video signal to the Gen-Lock Input Connector on the Rear Panel of the Camera.
- Connect the Frequency Counter to Pin Number 114 of IC7.
- Adjust data with the **ARROW** keys so that the Subcarrier Frequency becomes 4.433579 MHz ± 10 Hz.
- Press the **ENTER** key for next adjustment.

2.1. G/L H-Phase (Min.) Adjustment

Test Point: **CN5 (Video Output Connector)** **I/F Board**
CN6 (G/L Input Connector) **I/F Board**
Adjust: **RAM3 (39E)** **Main Board**

- The menu as shown in Table 5-4 will be displayed.



```
PANASONIC REMOTE EVR ADJUSTMENT SYSTEM (C) MCI Co. CCTV PRODUCT:CP650 EEPROM:0
* * * * * * * * * * * * * * * * * * * * * * * * * EVR * * * * * * * * * * * * * * * * * * * PAL



2.1. G/L H PHASE MIN.
  VIDEO OUT, G/L IN 0 + − 0.0000001 sec



   * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
<DEVICE>      : RAM3
<ADDRESS>     : 39E
<DATA>        : 19–19

<MESSAGE>     :


<INSTRUCTION> ADJUST DATA BY ARROW-KEY, ROLLDOWN : PREVIOUS ITEM
 LOAD (F1)    QUIT (F3)      SAVE (F5)
```

Table 5-4

- Supply the Composite Video signal to the Gen-Lock Input Connector on the Rear Panel of the Camera.
- Connect the CH1 of the Oscilloscope to the G/L Input Connector.
- Connect the CH2 of the Oscilloscope to the Video Output Connector.
- Adjust data with the **ARROW** keys so that the Video Out signal coincides to the G/L In signal as shown in Fig. 5-2

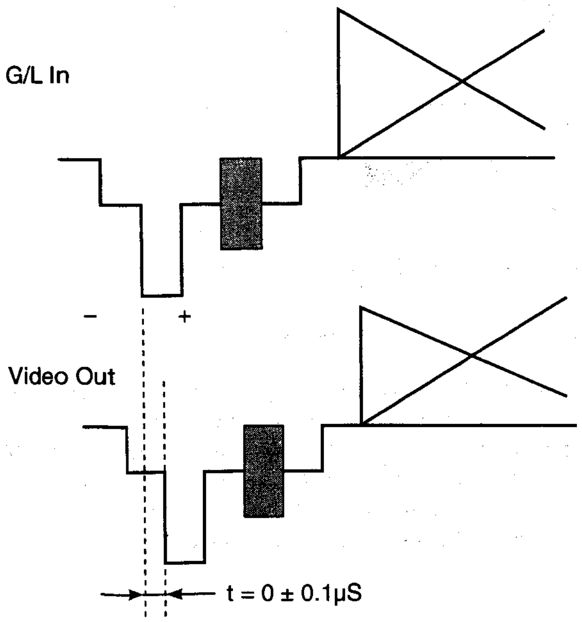


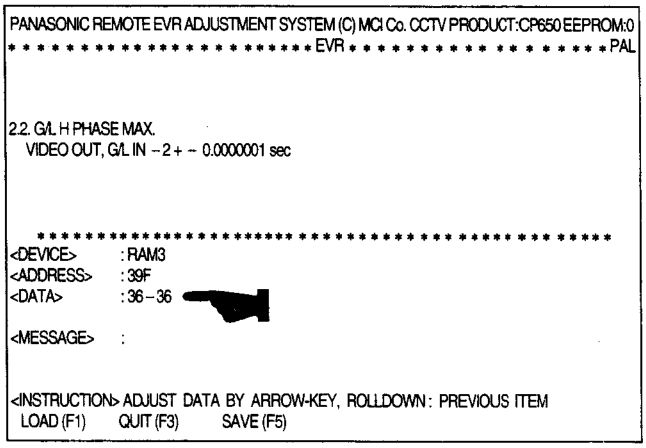
Fig. 5-2

- Press the **ENTER** key for next adjustment.

2.2. G/L H-Phase (Max.) Adjustment

Test Point: **CN5 (Video Output Connector)** **I/F Board**
CN6 (G/L Input Connector) **I/F Board**
Adjust: **RAM3 (39F)** **Main Board**

- The menu as shown in Table 5-5 will be displayed.



```
PANASONIC REMOTE EVR ADJUSTMENT SYSTEM (C) MCI Co. CCTV PRODUCT:CP650 EEPROM:0
* * * * * * * * * * * * * * * * * * * * * * * * * EVR * * * * * * * * * * * * * * * * * * * PAL



2.2. G/L H PHASE MAX.
  VIDEO OUT, G/L IN −2 + − 0.0000001 sec



   * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
<DEVICE>      : RAM3
<ADDRESS>     : 39F
<DATA>        : 36 − 36

<MESSAGE>     :


<INSTRUCTION> ADJUST DATA BY ARROW-KEY, ROLLDOWN : PREVIOUS ITEM
 LOAD (F1)    QUIT (F3)      SAVE (F5)
```

Table 5-5

- Supply the Composite Video signal to the Gen-Lock Input Connector on the Rear Panel of the Camera.
- Connect the CH1 of the Oscilloscope to the G/L Input Connector.
- Connect the CH2 of the Oscilloscope to the Video Output Connector.
- Adjust data with the **ARROW** keys so that the Video Out signal becomes as shown in Fig. 5-3.

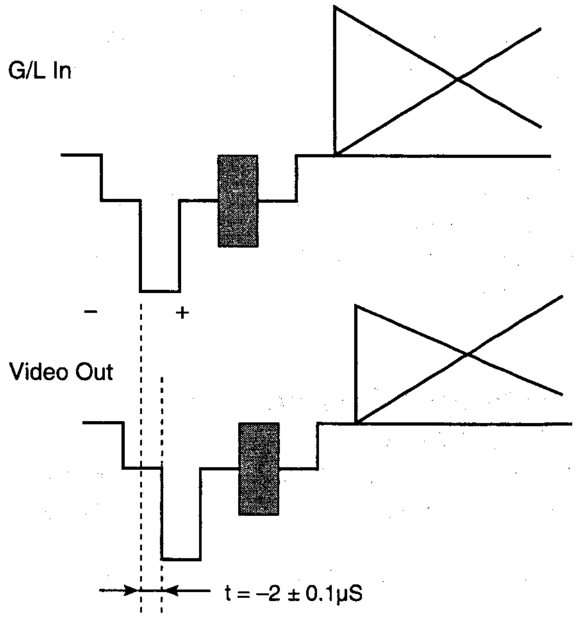


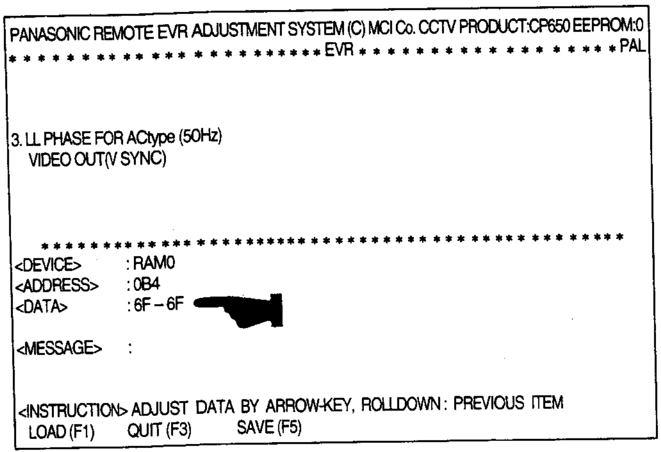
Fig. 5-3

- Press the **ENTER** key for next adjustment.

3. LL Phase Adjustment

Test Point: **CN5 (Video Output Connector)** **I/F Board**
Pin 1 of CN1 (L) **Power Board**
Adjust: **RAM0 (0B4)** **Main Board**

- The menu as shown in Table 5-6 will be displayed.



```
PANASONIC REMOTE EVR ADJUSTMENT SYSTEM (C) MCI Co. CCTV PRODUCT:CP650 EEPROM:0
************************EVR*******************PAL

3. LL PHASE FOR ACtype (50Hz)
   VIDEO OUT(V SYNC)

   ***********************************************************
<DEVICE>      : RAM0
<ADDRESS>     : 0B4
<DATA>        : 6F - 6F

<MESSAGE>     :

<INSTRUCTION> ADJUST DATA BY ARROW-KEY, ROLLDOWN : PREVIOUS ITEM
  LOAD (F1)     QUIT (F3)     SAVE (F5)
```

Table 5-6

- Connect the CH1 of the Oscilloscope to the Video Output Connector.
- Connect the CH2 of the Oscilloscope to the Pin 1 of CN1 on the Power Board.
- Trigger the Oscilloscope at V-rate.
- Adjust data with the **ARROW** keys so that the Decay point of V Sync signal coincides delays 2H ± 4H from the zero cross point of the AC Power source as shown in Fig. 5-4.

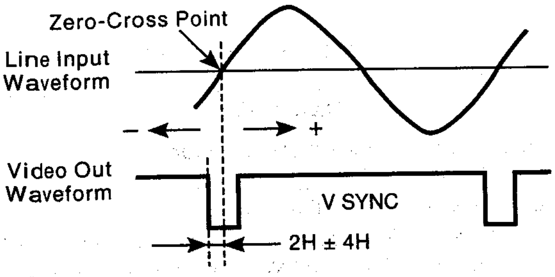


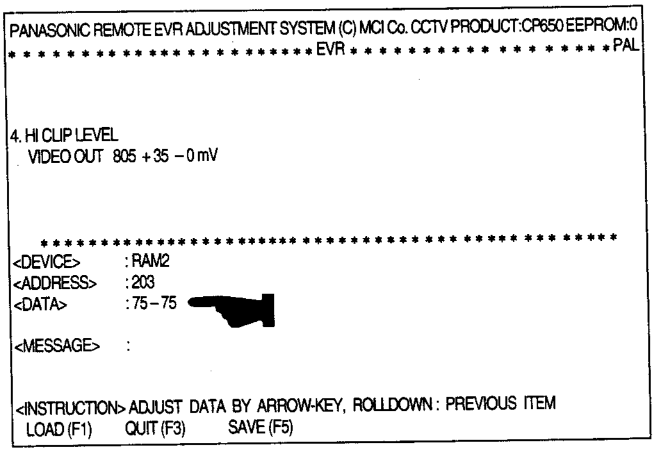
Fig. 5-4

- Press the **ENTER** key for next adjustment.

4. High Clip Adjustment

Test Point: **CN5 (Video Output Connector)** **I/F Board**
Adjust: **RAM2 (203)** **Main Board**

- The menu as shown in Table 5-7 will be displayed.



```
PANASONIC REMOTE EVR ADJUSTMENT SYSTEM (C) MCI Co. CCTV PRODUCT:CP650 EEPROM:0
************************EVR*******************PAL

4. HI CLIP LEVEL
   VIDEO OUT  805 +35 -0 mV

   ***********************************************************
<DEVICE>      : RAM2
<ADDRESS>     : 203
<DATA>        : 75 - 75

<MESSAGE>     :

<INSTRUCTION> ADJUST DATA BY ARROW-KEY, ROLLDOWN : PREVIOUS ITEM
  LOAD (F1)     QUIT (F3)     SAVE (F5)
```

Table 5-7

- Change the Colour Temperature from 5100K to 3200K by mount the Filter W12 on the Lens.
- Aim the Camera at the Logarithmic Gray Scale Chart.
- Connect the Oscilloscope to the Video Output Connector.
- Adjust data with the **ARROW** keys so that signal level becomes 805 $^{+35}_{-0}$ mV as shown in Fig. 5-5.

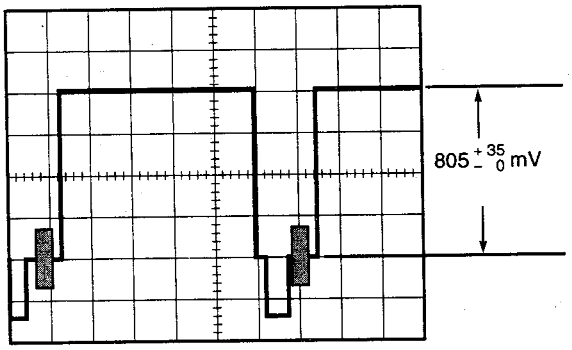


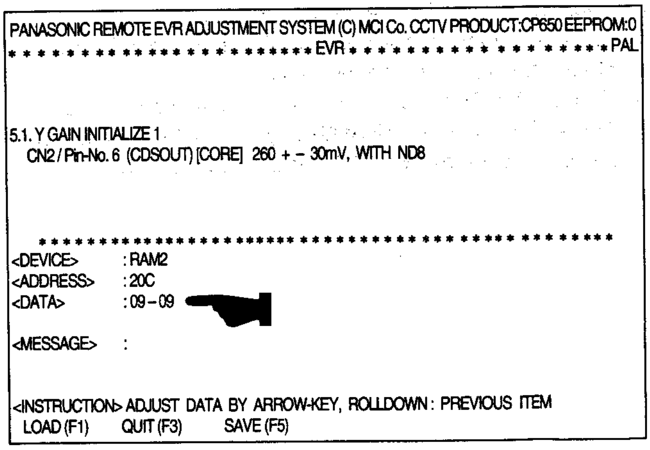
Fig. 5-5

- Press the **ENTER** key for next adjustment.

5.1. Y Gain Initialize 1 Adjustment

Test Point: **Pin 6 of CN2 (CDSOUT) Core Mother Board**
Adjust: **RAM2 (20C)** **Main Board**

- The menu as shown in Table 5-8 will be displayed.



```
PANASONIC REMOTE EVR ADJUSTMENT SYSTEM (C) MCI Co. CCTV PRODUCT:CP650 EEPROM:0
************************EVR*******************PAL

5.1. Y GAIN INITIALIZE 1
   CN2 / Pin-No. 6 (CDSOUT) [CORE]  260 + - 30mV, WITH ND8

   ***********************************************************
<DEVICE>      : RAM2
<ADDRESS>     : 20C
<DATA>        : 09 - 09

<MESSAGE>     :

<INSTRUCTION> ADJUST DATA BY ARROW-KEY, ROLLDOWN : PREVIOUS ITEM
  LOAD (F1)     QUIT (F3)     SAVE (F5)
```

Table 5-8

- Keep the Colour Temperature at 3200K.
- Aim the Camera at the Logarithmic Gray Scale Chart.
- Mount the ND8 Filter on the Lens.
- Connect the Oscilloscope to the Pin Number 6 of CN2.
- Adjust data with the **ARROW** keys so that CDS OUT signal level becomes 260 ± 30 mV as shown in Fig. 5-6.

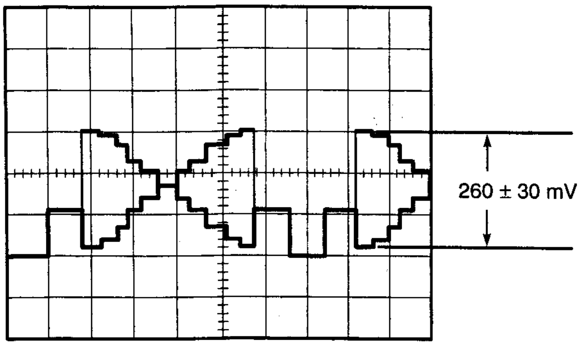


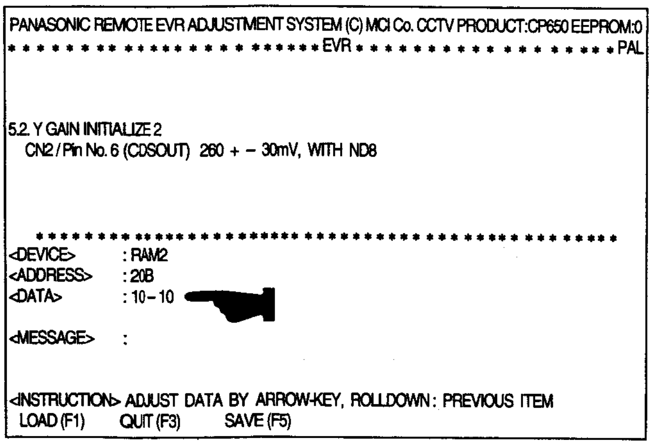
Fig. 5-6

- Press the **ENTER** key for next adjustment.

5.2. Y Gain Initialize 2 Adjustment

Test Point: **Pin 6 of CN2 (CDSOUT) Core Mother Board**
Adjust: **RAM2 (20B)** **Main Board**

- The menu as shown in Table 5-9 will be displayed.



```
PANASONIC REMOTE EVR ADJUSTMENT SYSTEM (C) MCI Co. CCTV PRODUCT:CP650 EEPROM:0
* * * * * * * * * * * * * * * * * * * * * * * EVR * * * * * * * * * * * * * * * * * * PAL


5.2. Y GAIN INITIALIZE 2
  CN2 / Pin No. 6 (CDSOUT)  260 + - 30mV, WITH ND8


* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
<DEVICE>     : RAM2
<ADDRESS>    : 20B
<DATA>       : 10-10

<MESSAGE>    :


<INSTRUCTION> ADJUST DATA BY ARROW-KEY, ROLLDOWN: PREVIOUS ITEM
  LOAD (F1)     QUIT (F3)     SAVE (F5)
```

Table 5-9

- Keep the Colour Temperature at 3200K.
- Aim the Camera at the Logarithmic Gray Scale Chart.
- Mount the ND8 Filter on the Lens.
- Connect the Oscilloscope to the Pin Number 6 of CN2.
- Adjust data with the **ARROW** keys so that CDS OUT signal level becomes 260 ± 30 mV as shown in Fig. 5-7.

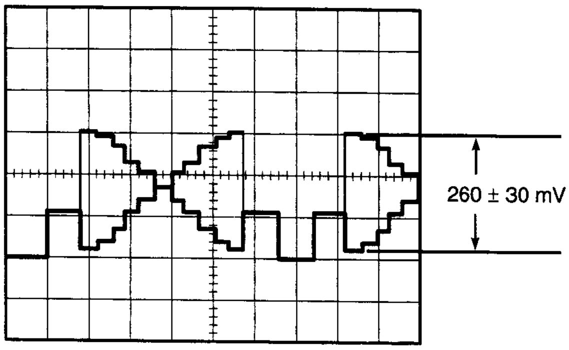


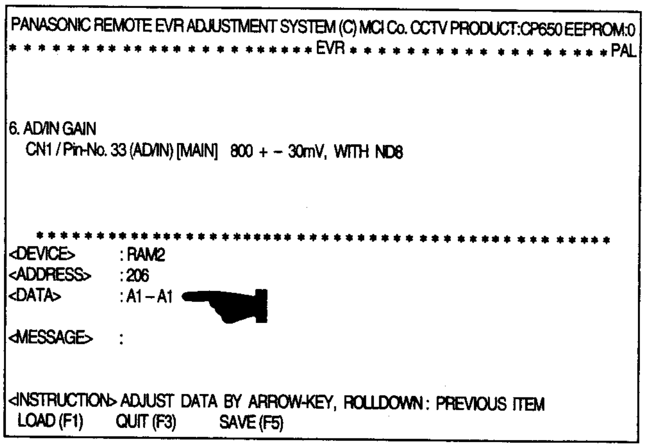
Fig. 5-7

- Press the **ENTER** key for next adjustment.

6. AD/IN Gain Adjustment

Test Point: **Pin 33 of CN1 (AD/IN)** **Main Board**
Adjust: **RAM2 (206)** **Main Board**

- The menu as shown in Table 5-10 will be displayed.



```
PANASONIC REMOTE EVR ADJUSTMENT SYSTEM (C) MCI Co. CCTV PRODUCT:CP650 EEPROM:0
* * * * * * * * * * * * * * * * * * * * * * * EVR * * * * * * * * * * * * * * * * * * PAL


6. AD/IN GAIN
  CN1 / Pin-No. 33 (AD/IN) [MAIN]  800 + - 30mV, WITH ND8


* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
<DEVICE>     : RAM2
<ADDRESS>    : 206
<DATA>       : A1-A1

<MESSAGE>    :


<INSTRUCTION> ADJUST DATA BY ARROW-KEY, ROLLDOWN: PREVIOUS ITEM
  LOAD (F1)     QUIT (F3)     SAVE (F5)
```

Table 5-10

- Keep the Colour Temperature at 3200K.
- Aim the Camera at the Logarithmic Gray Scale Chart.
- Mount the ND8 Filter on the Lens.
- Connect the Oscilloscope to the Pin Number 33 of CN1.
- Adjust data with the **ARROW** keys so that AD/IN signal level becomes 800 ± 30 mV as shown in Fig. 5-8.

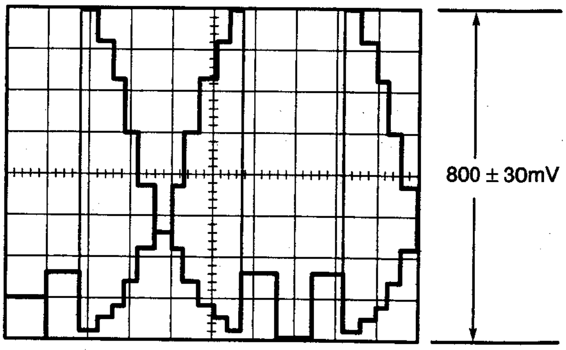


Fig. 5-8

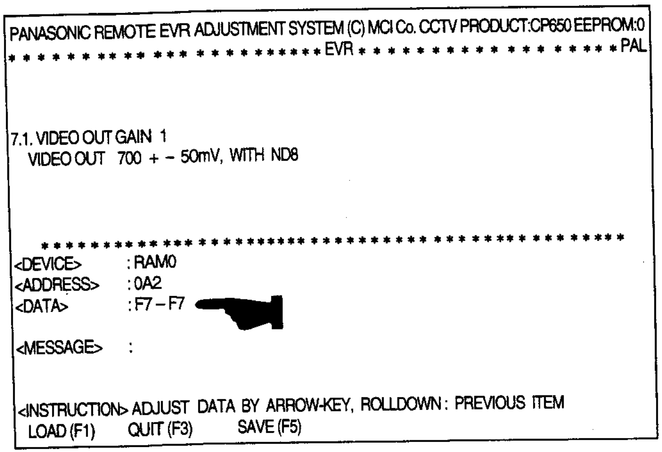
- Press the **ENTER** key for next adjustment.

7.1. Video Out Gain 1 Adjustment

Test Point: CN5 (Video Output Connector) I/F Board

Adjust: RAM0 (0A2) Main Board

- The menu as shown in Table 5-11 will be displayed.



```
PANASONIC REMOTE EVR ADJUSTMENT SYSTEM (C) MCI Co. CCTV PRODUCT:CP650 EEPROM:0
* * * * * * * * * * * * * * * * * * * * * * *EVR* * * * * * * * * * * * * * * * * *PAL

7.1. VIDEO OUT GAIN 1
  VIDEO OUT  700 + - 50mV, WITH ND8

  ***************************************************
<DEVICE>      : RAM0
<ADDRESS>     : 0A2
<DATA>        : F7 - F7

<MESSAGE>     :

<INSTRUCTION> ADJUST DATA BY ARROW-KEY, ROLLDOWN : PREVIOUS ITEM
  LOAD (F1)     QUIT (F3)     SAVE (F5)
```

Table 5-11

- Keep the Colour Temperature at 3200K.
- Aim the Camera at the Logarithmic Gray Scale Chart.
- Mount the ND8 Filter on the Lens.
- Connect the Oscilloscope to the Video Output Connector.
- Adjust data with the **ARROW** keys so that Video signal level becomes 700 ± 50 mV as shown in Fig. 5-9.

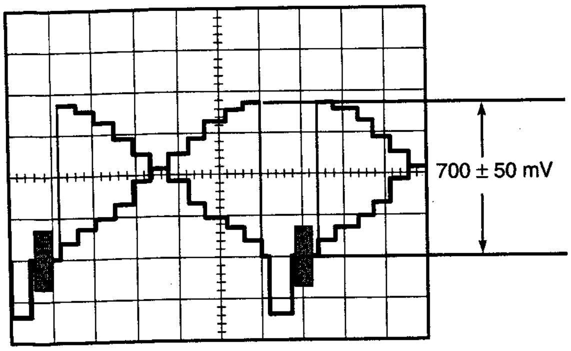


Fig. 5-9

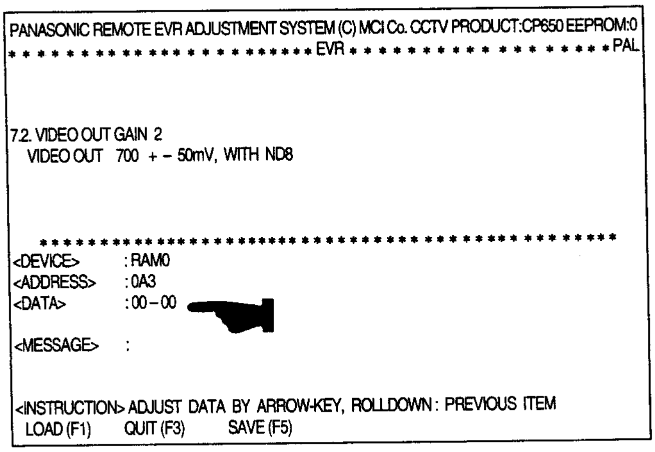
- Press the **ENTER** key for next adjustment.

7.2. Video Out Gain 2 Adjustment

Test Point: CN5 (Video Output Connector) I/F Board

Adjust: RAM0 (0A3) Main Board

- The menu as shown in Table 5-12 will be displayed.



```
PANASONIC REMOTE EVR ADJUSTMENT SYSTEM (C) MCI Co. CCTV PRODUCT:CP650 EEPROM:0
* * * * * * * * * * * * * * * * * * * * * * *EVR* * * * * * * * * * * * * * * * * *PAL

7.2. VIDEO OUT GAIN 2
  VIDEO OUT  700 + - 50mV, WITH ND8

  ***************************************************
<DEVICE>      : RAM0
<ADDRESS>     : 0A3
<DATA>        : 00 - 00

<MESSAGE>     :

<INSTRUCTION> ADJUST DATA BY ARROW-KEY, ROLLDOWN : PREVIOUS ITEM
  LOAD (F1)     QUIT (F3)     SAVE (F5)
```

Table 5-12

- Keep the Colour Temperature at 3200K.
- Aim the Camera at the Logarithmic Gray Scale Chart.
- Mount the ND8 Filter on the Lens.
- Connect the Oscilloscope to the Video Output Connector.
- Adjust data with the **ARROW** keys so that Video signal level becomes 700 ± 50 mV as shown in Fig. 5-10.

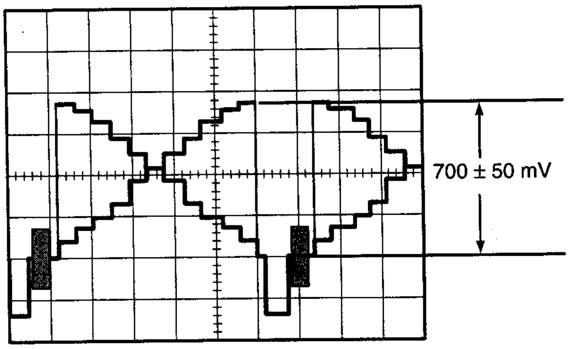


Fig. 5-10

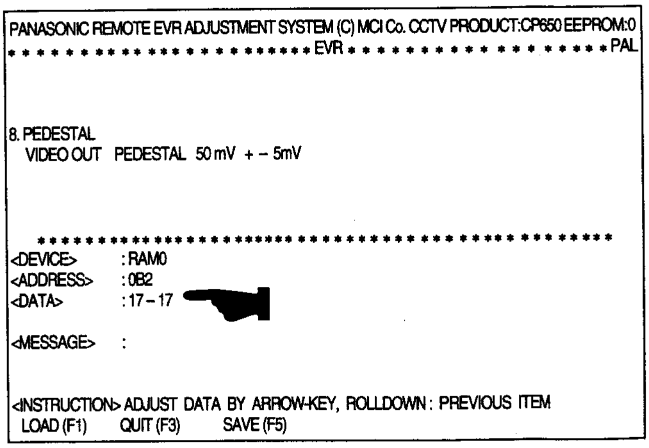
- Press the **ENTER** key for next adjustment.

8. Pedestal Adjustment

Test Point: CN5 (Video Output Connector) I/F Board

Adjust: RAM0 (0B2) Main Board

- The menu as shown in Table 5-13 will be displayed.



```
PANASONIC REMOTE EVR ADJUSTMENT SYSTEM (C) MCI Co. CCTV PRODUCT:CP650 EEPROM:0
* * * * * * * * * * * * * * * * * * * * * * *EVR* * * * * * * * * * * * * * * * * *PAL

8. PEDESTAL
  VIDEO OUT  PEDESTAL  50mV + - 5mV

  ***************************************************
<DEVICE>      : RAM0
<ADDRESS>     : 0B2
<DATA>        : 17 - 17

<MESSAGE>     :

<INSTRUCTION> ADJUST DATA BY ARROW-KEY, ROLLDOWN : PREVIOUS ITEM
  LOAD (F1)     QUIT (F3)     SAVE (F5)
```

Table 5-13

- Connect the Oscilloscope to the Video Output Connector.
- Adjust data with the **ARROW** keys so that Pedestal level becomes 50 ± 5 mV as shown in Fig. 5-11.

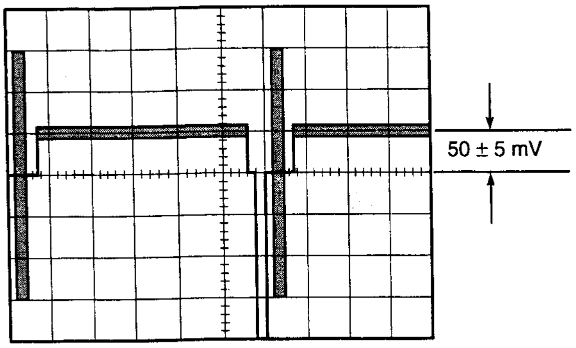


Fig. 5-11

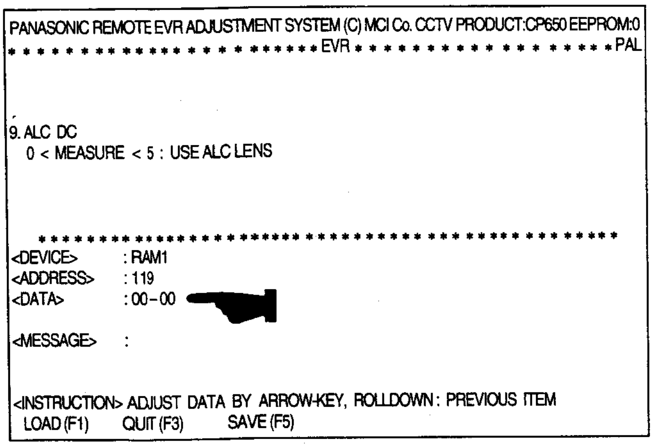
- Press the **ENTER** key for next adjustment.

9. ALC DC Adjustment

Test Point: CN5 (Video Output Connector) I/F Board

Adjust: RAM1 (119) Main Board

- The menu as shown in Table 5-14 will be displayed.



```
PANASONIC REMOTE EVR ADJUSTMENT SYSTEM (C) MCI Co. CCTV PRODUCT:CP650 EEPROM:0
*************************EVR*******************PAL


9. ALC DC
  0 < MEASURE < 5 : USE ALC LENS


**********************************************
<DEVICE>     : RAM1
<ADDRESS>    : 119
<DATA>       : 00-00

<MESSAGE>    :

<INSTRUCTION> ADJUST DATA BY ARROW-KEY, ROLLDOWN : PREVIOUS ITEM
  LOAD (F1)    QUIT (F3)    SAVE (F5)
```

Table 5-14

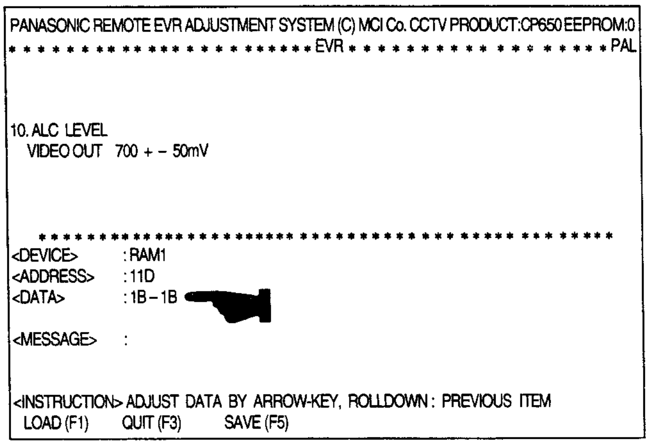
- Keep the Colour Temperature at 3200K.
- Aim the Camera at the Logarithmic Gray Scale Chart.
- Adjust data with the **ARROW** keys so that the measure level becomes 00 and 05.
- Press the **ENTER** key for next adjustment.

10. ALC Level Adjustment

Test Point: CN5 (Video Output Connector) I/F Board

Adjust: RAM1 (11D) Main Board

- The menu as shown in Table 5-15 will be displayed.



```
PANASONIC REMOTE EVR ADJUSTMENT SYSTEM (C) MCI Co. CCTV PRODUCT:CP650 EEPROM:0
************************EVR*******************PAL


10. ALC LEVEL
  VIDEO OUT  700 + - 50mV


**********************************************
<DEVICE>     : RAM1
<ADDRESS>    : 11D
<DATA>       : 1B-1B

<MESSAGE>    :

<INSTRUCTION> ADJUST DATA BY ARROW-KEY, ROLLDOWN : PREVIOUS ITEM
  LOAD (F1)    QUIT (F3)    SAVE (F5)
```

Table 5-15

- Keep the Colour Temperature at 3200K.
- Aim the Camera at the Logarithmic Gray Scale Chart.
- Connect the Oscilloscope to the Video Output Connector.
- Adjust data with the **ARROW** keys so that the video signal level becomes 700 ± 50 mV as shown in Fig. 5-12.

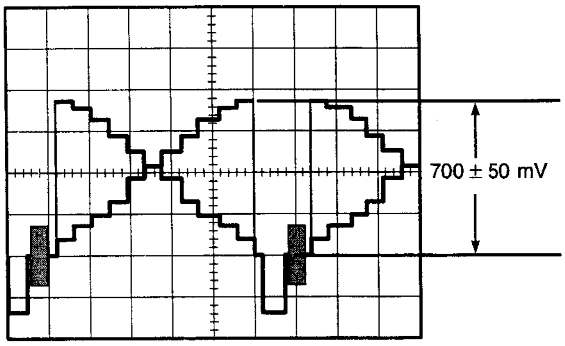


Fig. 5-12

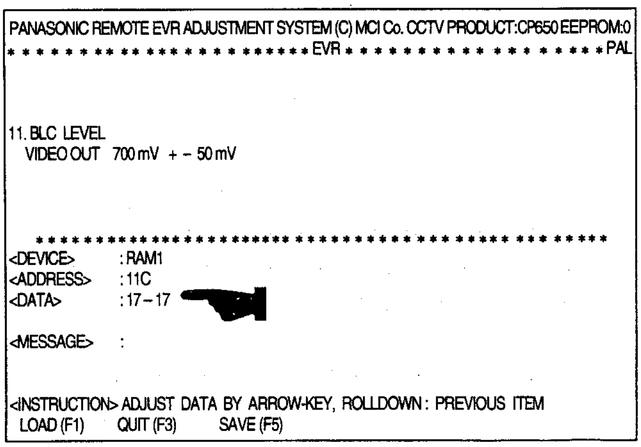
- Press the **ENTER** key for next adjustment.

11. BLC Level Adjustment

Test Point: CN5 (Video Output Connector) I/F Board

Adjust: RAM1 (11C) Main Board

- The menu as shown in Table 5-16 will be displayed.



```
PANASONIC REMOTE EVR ADJUSTMENT SYSTEM (C) MCI Co. CCTV PRODUCT:CP650 EEPROM:0
************************EVR*******************PAL


11. BLC LEVEL
  VIDEO OUT  700mV + - 50mV


**********************************************
<DEVICE>     : RAM1
<ADDRESS>    : 11C
<DATA>       : 17-17

<MESSAGE>    :

<INSTRUCTION> ADJUST DATA BY ARROW-KEY, ROLLDOWN : PREVIOUS ITEM
  LOAD (F1)    QUIT (F3)    SAVE (F5)
```

Table 5-16

- Keep the Colour Temperature at 3200K.
- Aim the Camera at the Logarithmic Gray Scale Chart.
- Connect the Oscilloscope to the Video Output Connector.
- Adjust data with the **ARROW** keys so that the video signal level becomes 700 ± 50 mV as shown in Fig. 5-13.

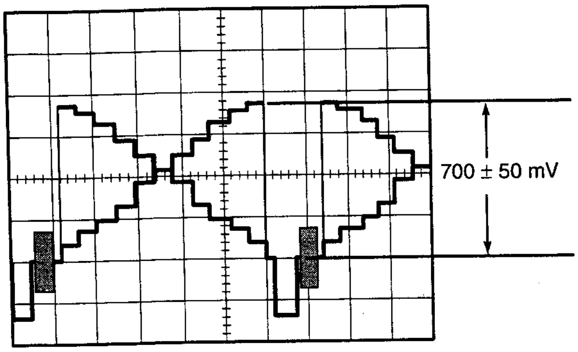


Fig. 5-13

- Press the **ENTER** key for next adjustment.

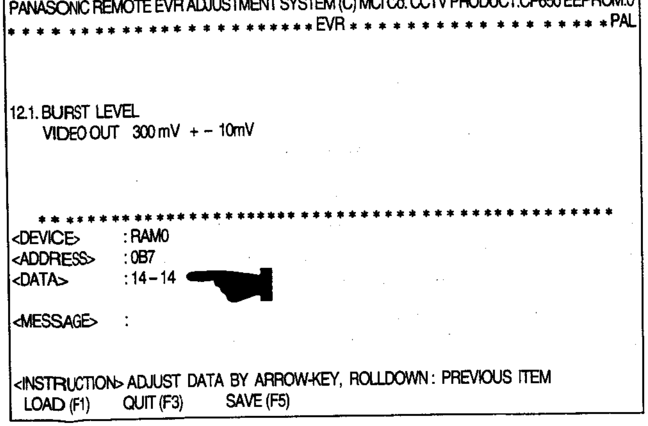
12. Burst Level Adjustment

- Repeat adjust from steps **12.1** to **12.4** until Burst Level, Phase and Red vector phase are adjusted proper position as shown in Fig.5-14, 5-15, 5-16 and Table 5-25.
- First, adjust the Burst Level and Phase according to following formula.
  DATA of 0B7(**12.1**) = DATA of 3CA (**12.3**)
  DATA of 0B8 (**12.2**) = DATA of 3CB (**12.4**)
  Note the DATA at each adjustment step.
- Then adjust the Red Vector Phase according to following formula.
  DATA of 0B7 (**12.1**) → Current DATA + α
  DATA of 0B8 (**12.2**) → Current DATA − α
  DATA of 3CA (**12.3**) → Current DATA − α
  DATA of 3CB (**12.4**) → Current DATA + α

12.1. Burst Level Adjustment

Test Point: **CN5 (Video Output Connector)** **I/F Board**
Adjust: **RAM0 (0B7)** **Main Board**

- The menu as shown in Table 5-17 will be displayed.



```
PANASONIC REMOTE EVR ADJUSTMENT SYSTEM (C) MCI Co. CCTV PRODUCT:CP650 EEPROM:0
* * * * * * * * * * * * * * * * * * * * * * * EVR * * * * * * * * * * * * * * * * * * PAL

12.1. BURST LEVEL
    VIDEO OUT  300mV  + - 10mV

* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
<DEVICE>     : RAM0
<ADDRESS>    : 0B7
<DATA>       : 14-14

<MESSAGE>    :

<INSTRUCTION> ADJUST DATA BY ARROW-KEY, ROLLDOWN : PREVIOUS ITEM
 LOAD (F1)    QUIT (F3)    SAVE (F5)
```

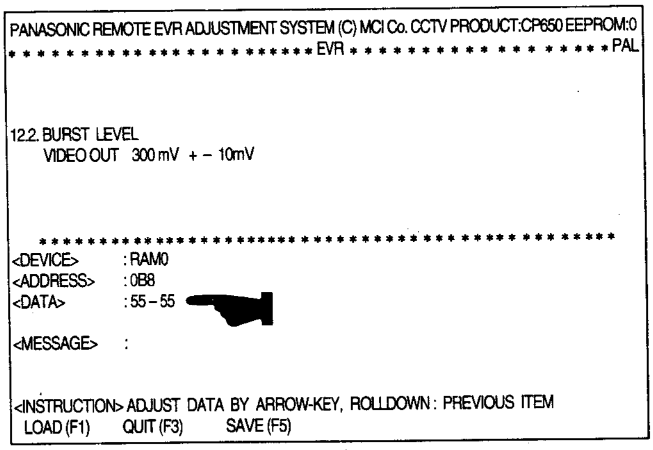
Table 5-17

- Keep the Colour Temperature at 3200K.
- Aim the Camera at the Colour Chip Chart.
- Connect the Oscilloscope to the Video Output Connector.
- Set the Mode Switch of the Vectorscope to NTSC mode.
- Adjust data with the **ARROW** keys so that the Burst level and Phase are proper position as shown in Fig. 5-15.
- Note the DATA for step **12.3**.
- Press the **ENTER** key for next adjustment.

12.2. Burst Level Adjustment

Test Point: **CN5 (Video Output Connector)** **I/F Board**
Adjust: **RAM0 (0B8)** **Main Board**

- The menu as shown in Table 5-18 will be displayed.



```
PANASONIC REMOTE EVR ADJUSTMENT SYSTEM (C) MCI Co. CCTV PRODUCT:CP650 EEPROM:0
* * * * * * * * * * * * * * * * * * * * * * * EVR * * * * * * * * * * * * * * * * * * PAL

12.2. BURST LEVEL
    VIDEO OUT  300mV  + - 10mV

* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
<DEVICE>     : RAM0
<ADDRESS>    : 0B8
<DATA>       : 55-55

<MESSAGE>    :

<INSTRUCTION> ADJUST DATA BY ARROW-KEY, ROLLDOWN : PREVIOUS ITEM
 LOAD (F1)    QUIT (F3)    SAVE (F5)
```

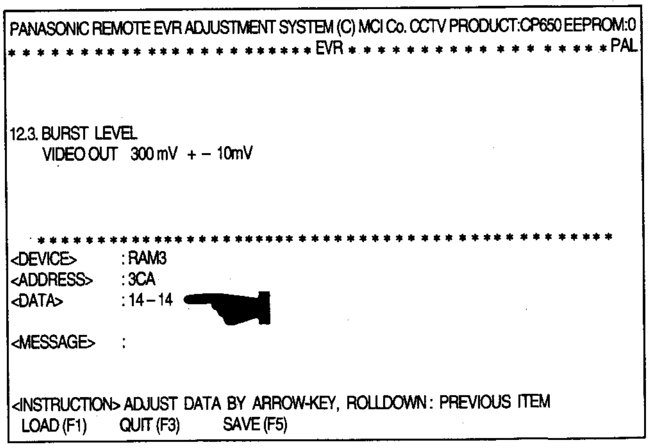
Table 5-18

- Keep the Colour Temperature at 3200K.
- Aim the Camera at the Colour Chip Chart.
- Connect the Oscilloscope to the Video Output Connector.
- Adjust data with the **ARROW** keys so that the Burst level and Phase are proper position as shown in Fig. 5-15.
- Note the DATA for step **12.4**.
- Press the **ENTER** key for next adjustment.

12.3. Burst Level Adjustment

Test Point: **CN5 (Video Output Connector)** **I/F Board**
Adjust: **RAM3 (3CA)** **Main Board**

- The menu as shown in Table 5-19 will be displayed.



```
PANASONIC REMOTE EVR ADJUSTMENT SYSTEM (C) MCI Co. CCTV PRODUCT:CP650 EEPROM:0
* * * * * * * * * * * * * * * * * * * * * * * EVR * * * * * * * * * * * * * * * * * * PAL

12.3. BURST LEVEL
    VIDEO OUT  300mV  + - 10mV

* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
<DEVICE>     : RAM3
<ADDRESS>    : 3CA
<DATA>       : 14-14

<MESSAGE>    :

<INSTRUCTION> ADJUST DATA BY ARROW-KEY, ROLLDOWN : PREVIOUS ITEM
 LOAD (F1)    QUIT (F3)    SAVE (F5)
```

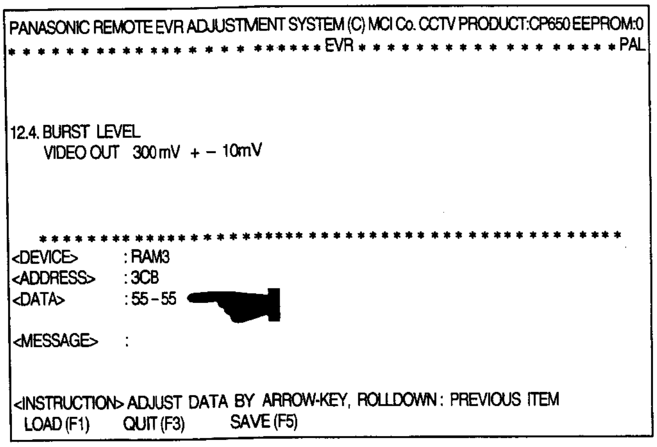
Table 5-19

- Keep the Colour Temperature at 3200K.
- Aim the Camera at the Colour Chip Chart.
- Connect the Oscilloscope to the Video Output Connector.
- Adjust data with the **ARROW** keys so that the data becomes same value of adjustment step **12.1**.
- Press the **ENTER** key for next adjustment.

12.4. Burst Level Adjustment

Test Point: **CN5 (Video Output Connector)** **I/F Board**
Adjust: **RAM3 (3CB)** **Main Board**

- The menu as shown in Table 5-20 will be displayed.



```
PANASONIC REMOTE EVR ADJUSTMENT SYSTEM (C) MCI Co. CCTV PRODUCT:CP650 EEPROM:0
* * * * * * * * * * * * * * * * * * * * * EVR * * * * * * * * * * * * * * * * * * PAL


12.4. BURST LEVEL
    VIDEO OUT   300mV + - 10mV


* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
<DEVICE>      : RAM3
<ADDRESS>     : 3CB
<DATA>        : 55-55

<MESSAGE>   :

<INSTRUCTION> ADJUST DATA BY ARROW-KEY, ROLLDOWN : PREVIOUS ITEM
  LOAD (F1)    QUIT (F3)     SAVE (F5)
```

Table 5-20

- Keep the Colour Temperature at 3200K.
- Aim the Camera at the Colour Chip Chart.
- Connect the Oscilloscope to the Video Output Connector.
- Adjust data with the **ARROW** keys so that the data becomes same value of adjustment step **12.2**.
- Press the **ENTER** key and **ROLL DOWN** Key until menu as shown in Table 5-21 will be displayed.

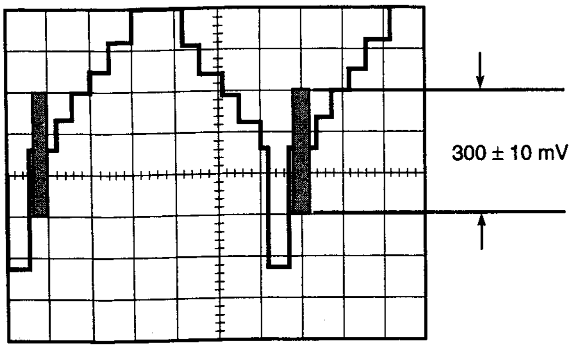


Fig. 5-14

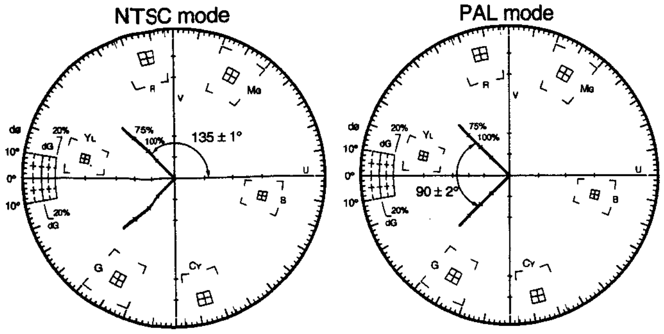
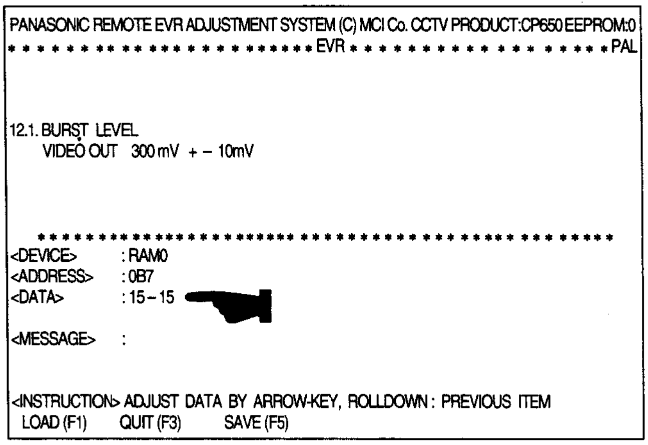


Fig. 5-15

12.1. Burst Level Adjustment

Test Point: **CN5 (Video Output Connector)** **I/F Board**
Adjust: **RAM0 (0B7)** **Main Board**

- The menu as shown in Table 5-21 will be displayed.



```
PANASONIC REMOTE EVR ADJUSTMENT SYSTEM (C) MCI Co. CCTV PRODUCT:CP650 EEPROM:0
* * * * * * * * * * * * * * * * * * * * * * * EVR * * * * * * * * * * * * * * * * * * PAL


12.1. BURST LEVEL
    VIDEO OUT   300mV + - 10mV


* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
<DEVICE>      : RAM0
<ADDRESS>     : 0B7
<DATA>        : 15-15

<MESSAGE>   :

<INSTRUCTION> ADJUST DATA BY ARROW-KEY, ROLLDOWN : PREVIOUS ITEM
  LOAD (F1)    QUIT (F3)     SAVE (F5)
```

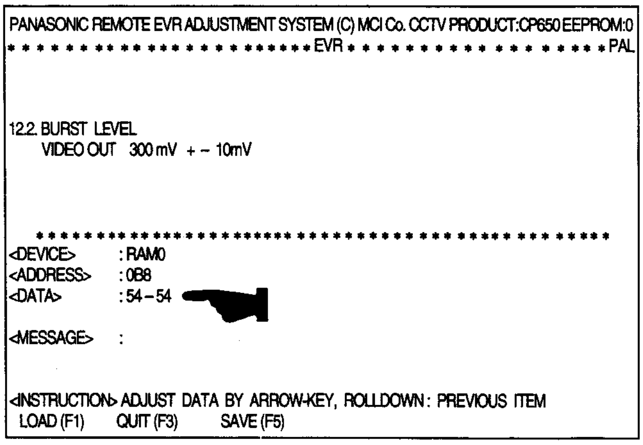
Table 5-21

- Keep the Colour Temperature at 3200K.
- Aim the Camera at the Colour Chip Chart.
- Connect the Oscilloscope to the Video Output Connector.
- Adjust data with the **ARROW** keys so that the data becomes +α from noted data.
- Press the **ENTER** key for next adjustment.

12.2. Burst Level Adjustment

Test Point: **CN5 (Video Output Connector)** **I/F Board**
Adjust: **RAM0(0B8)** **Main Board**

- The menu as shown in Table 5-22 will be displayed.



```
PANASONIC REMOTE EVR ADJUSTMENT SYSTEM (C) MCI Co. CCTV PRODUCT:CP650 EEPROM:0
* * * * * * * * * * * * * * * * * * * * * * * EVR * * * * * * * * * * * * * * * * * * PAL


12.2. BURST LEVEL
    VIDEO OUT   300mV + - 10mV


* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
<DEVICE>      : RAM0
<ADDRESS>     : 0B8
<DATA>        : 54-54

<MESSAGE>   :

<INSTRUCTION> ADJUST DATA BY ARROW-KEY, ROLLDOWN : PREVIOUS ITEM
  LOAD (F1)    QUIT (F3)     SAVE (F5)
```

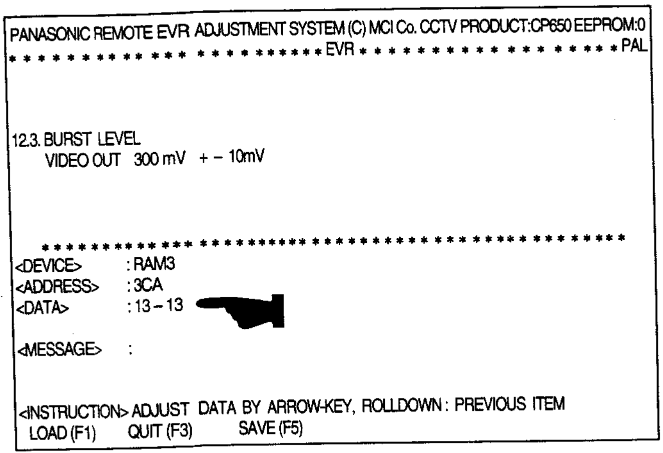
Table 5-22

- Keep the Colour Temperature at 3200K.
- Aim the Camera at the Colour Chip Chart.
- Connect the Oscilloscope to the Video Output Connector.
- Adjust data with the **ARROW** keys so that the data becomes –α from noted data.
- Press the **ENTER** key for next adjustment.

12.3. Burst Level Adjustment

Test Point: **CN5 (Video Output Connector)** **I/F Board**
Adjust: **RAM3(3CA)** **Main Board**

- The menu as shown in Table 5-23 will be displayed.



```
PANASONIC REMOTE EVR ADJUSTMENT SYSTEM (C) MCI Co. CCTV PRODUCT:CP650 EEPROM:0
* * * * * * * * * * * * * * * * * * * * * * * EVR * * * * * * * * * * * * * * * * * * PAL

12.3. BURST LEVEL
     VIDEO OUT  300 mV  + - 10mV

     * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
<DEVICE>       : RAM3
<ADDRESS>      : 3CA
<DATA>         : 13 - 13

<MESSAGE>   :

<INSTRUCTION> ADJUST  DATA BY ARROW-KEY, ROLLDOWN : PREVIOUS ITEM
  LOAD (F1)      QUIT (F3)        SAVE (F5)
```

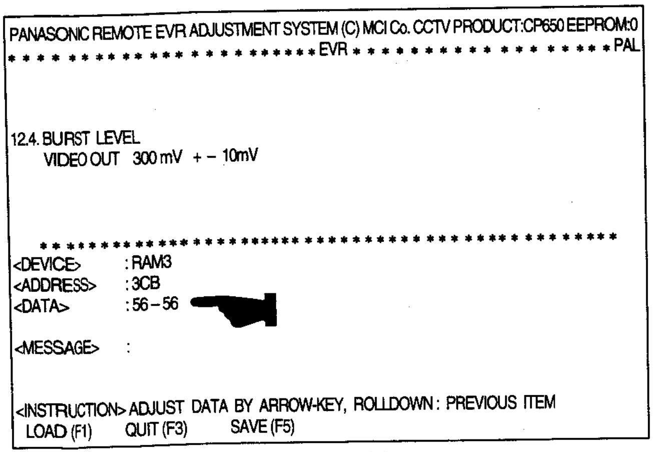
Table 5-22

- Keep the Colour Temperature at 3200K.
- Aim the Camera at the Colour Chip Chart.
- Connect the Oscilloscope to the Video Output Connector.
- Adjust data with the **ARROW** keys so that the data becomes –α from noted data.
- Press the **ENTER** key for next adjustment.

12.4. Burst Level Adjustment

Test Point: **CN5 (Video Output Connector)** **I/F Board**
Adjust: **RAM3(3CB)** **Main Board**

- The menu as shown in Table 5-24 will be displayed.



```
PANASONIC REMOTE EVR ADJUSTMENT SYSTEM (C) MCI Co. CCTV PRODUCT:CP650 EEPROM:0
* * * * * * * * * * * * * * * * * * * * * * * EVR * * * * * * * * * * * * * * * * * * PAL

12.4. BURST LEVEL
     VIDEO OUT  300 mV  + - 10mV

     * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
<DEVICE>       : RAM3
<ADDRESS>      : 3CB
<DATA>         : 56 - 56

<MESSAGE>   :

<INSTRUCTION> ADJUST  DATA BY ARROW-KEY, ROLLDOWN : PREVIOUS ITEM
  LOAD (F1)      QUIT (F3)        SAVE (F5)
```

Table 5-24

- Keep the Colour Temperature at 3200K.
- Aim the Camera at the Colour Chip Chart.
- Connect the Oscilloscope to the Video Output Connector.
- Adjust data with the **ARROW** keys so that the data becomes +α from noted data.
- Press the **ENTER** key and **ROLL DOWN** Key to confirm Burst Level, PHASE and Red Vector position are within the specification as shown in Fig. 5-14, 5-15 , 5-16 and Table 5-25.

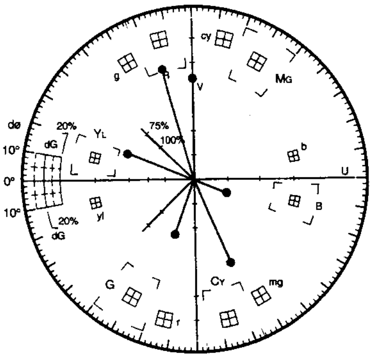


Fig. 5-16

	Red	Yellow
Phase	108 ± 2°	160 ± 5°
Gain	220 ± 5 %	100 ± 5 %

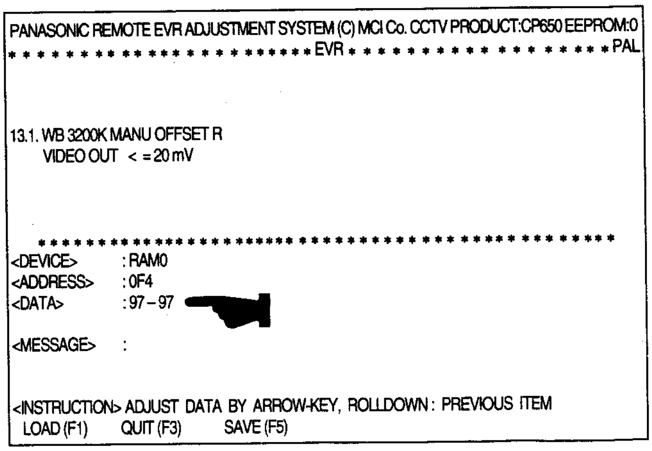
Table 5-25

- Repeat adjust from **12.1** to **12.4** until Burst Level, PHASE and Red Vector position are adjusted proper position.
- Press the **ENTER** key for next adjustment.

13.1. R White Balance 3200K Manual Offset Adjustment

Test Point: **CN5 (Video Output Connector)** **I/F Board**
Adjust: **RAM0 (0F4)** **Main Board**

- The menu as shown in Table 5-26 will be displayed.



```
PANASONIC REMOTE EVR ADJUSTMENT SYSTEM (C) MCI Co. CCTV PRODUCT:CP650 EEPROM:0
* * * * * * * * * * * * * * * * * * * * * * * EVR * * * * * * * * * * * * * * * * * * PAL

13.1. WB 3200K MANU OFFSET R
     VIDEO OUT  < = 20 mV

     * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
<DEVICE>       : RAM0
<ADDRESS>      : 0F4
<DATA>         : 97 - 97

<MESSAGE>   :

<INSTRUCTION> ADJUST  DATA BY ARROW-KEY, ROLLDOWN : PREVIOUS ITEM
  LOAD (F1)      QUIT (F3)        SAVE (F5)
```

Table 5-26

- Keep the Colour Temperature at 3200K.
- Aim the Camera at the White Chart.
- Set the Gain Control of the Vectorscope to maximum.
- Adjust data with the **ARROW** keys so that the vector position at the center of the vectrscope as shown in Fig.5-17.

Positions at center.

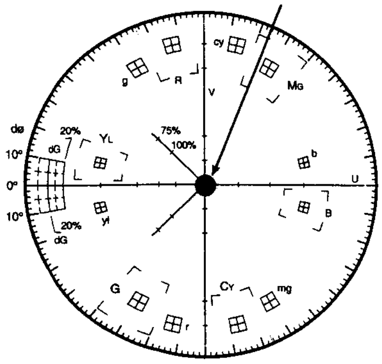


Fig. 5-17

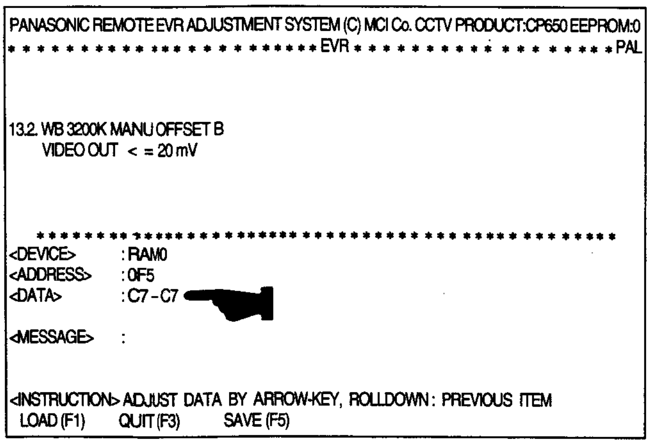
- Press the **ENTER** key for next adjustment.

13.2. B White Balance 3200K Manual Offset Adjustment

Test Point: **CN5 (Video Output Connector)** **I/F Board**

Adjust: **RAM0 (0F5)** **Main Board**

- The menu as shown in Table 5-27 will be displayed.



```
PANASONIC REMOTE EVR ADJUSTMENT SYSTEM (C) MCI Co. CCTV PRODUCT:CP650 EEPROM:0
* * * * * * * * * * * * * * * * * * * * * * * EVR * * * * * * * * * * * * * * * * * * PAL


13.2. WB 3200K MANU OFFSET B
     VIDEO OUT  < = 20 mV


  * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
<DEVICE>      : RAM0
<ADDRESS>     : 0F5
<DATA>        : C7 - C7

<MESSAGE>     :


<INSTRUCTION> ADJUST DATA BY ARROW-KEY, ROLLDOWN : PREVIOUS ITEM
  LOAD (F1)     QUIT (F3)     SAVE (F5)
```

Table 5-27

- Keep the Colour Temperature at 3200K.
- Aim the Camera at the White Chart.
- Set the Gain Control of the Vectoscope to maximum.
- Adjust data with the **ARROW** keys so that the vector position at the center of the vectrscope as shown in Fig.5-18.

Positions at center.

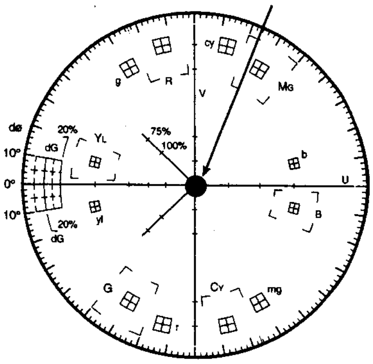


Fig. 5-18

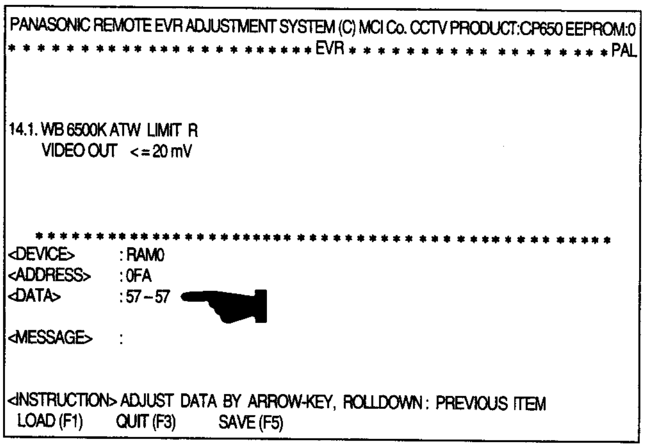
- Repeat adjust steps **13.1** and **13.2** until vector positions at the center of the Vectorscope.
- Press the **ENTER** key for next adjustment.

14.1. R White Balance 6500K ATW Limit Adjustment

Test Point: **CN5 (Video Output Connector)** **I/F Board**

Adjust: **RAM0 (0FA)** **Main Board**

- The menu as shown in Table 5-28 will be displayed.



```
PANASONIC REMOTE EVR ADJUSTMENT SYSTEM (C) MCI Co. CCTV PRODUCT:CP650 EEPROM:0
* * * * * * * * * * * * * * * * * * * * * * * EVR * * * * * * * * * * * * * * * * * * PAL


14.1. WB 6500K ATW LIMIT R
     VIDEO OUT  < = 20 mV


  * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
<DEVICE>      : RAM0
<ADDRESS>     : 0FA
<DATA>        : 57 - 57

<MESSAGE>     :


<INSTRUCTION> ADJUST DATA BY ARROW-KEY, ROLLDOWN : PREVIOUS ITEM
  LOAD (F1)     QUIT (F3)     SAVE (F5)
```

Table 5-28

- Aim the Camera at the White Chart.
- Change the Colour Temperature from the 3200K to 6500K by replace Colour Conversion Filter from W12 to C4.
- Set the Gain Control of the Vectoscope to maximum.
- Adjust data with the **ARROW** keys so that the vector position at the center of the vectrscope as shown in Fig.5-19.

Positions at center.

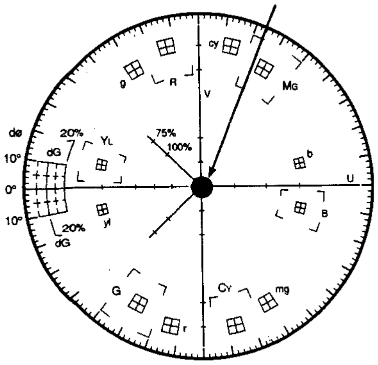


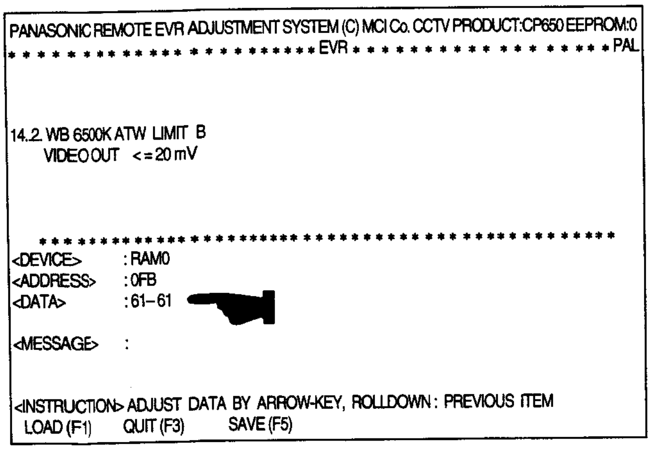
Fig. 5-19

- Press the **ENTER** key for next adjustment.

14.2. B White Balance 6500K ATW Limit Adjustment

Test Point: **CN5 (Video Output Connector)** **I/F Board**
Adjust: **RAM0 (0FB)** **Main Board**

- The menu as shown in Table 5-29 will be displayed.



```
PANASONIC REMOTE EVR ADJUSTMENT SYSTEM (C) MCI Co. CCTV PRODUCT:CP650 EEPROM:0
* * * * * * * * * * * * * * * * * * * * * * * * * *EVR* * * * * * * * * * * * * * * * * * * * *PAL


14.2. WB 6500K ATW LIMIT B
   VIDEO OUT  <=20mV


 * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
<DEVICE>     :RAM0
<ADDRESS>    :0FB
<DATA>       :61-61

<MESSAGE>    :

<INSTRUCTION> ADJUST DATA BY ARROW-KEY, ROLLDOWN: PREVIOUS ITEM
 LOAD (F1)    QUIT (F3)     SAVE (F5)
```

Table 5-29

- Keep the Colour Temperature at 6500K.
- Aim the Camera at the White Chart.
- Set the Gain Control of the Vectoscope to maximum.
- Adjust data with the **ARROW** keys so that the vector position at the center of the vectrscope as shown in Fig.5-20.

Positions at center.

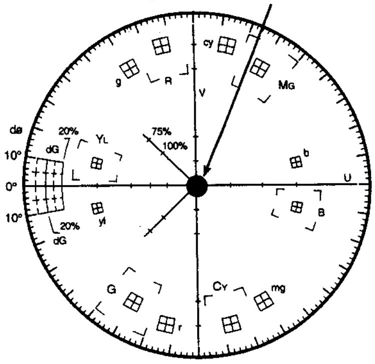


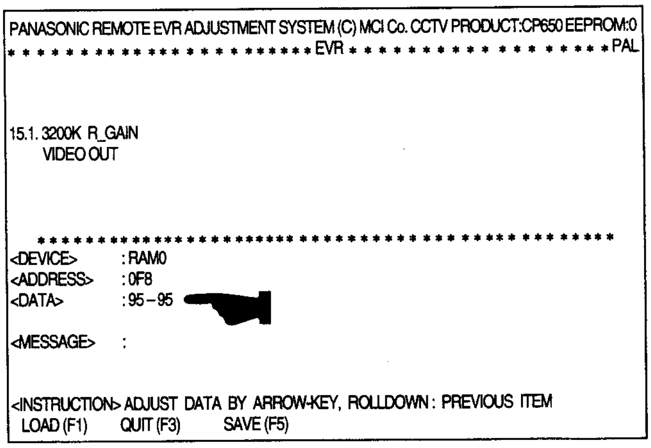
Fig. 5-20

- Repeat adjust steps **14.1** and **14.2** until vector positions at the center of the Vectorscope.
- Press the **ENTER** key for next adjustment.

15.1. 3200K R_Gain Adjustment

Test Point: **CN5 (Video Output Connector)** **I/F Board**
Adjust: **RAM0 (0F8)** **Main Board**

- The menu as shown in Table 5-30 will be displayed.



```
PANASONIC REMOTE EVR ADJUSTMENT SYSTEM (C) MCI Co. CCTV PRODUCT:CP650 EEPROM:0
* * * * * * * * * * * * * * * * * * * * * * * * * *EVR* * * * * * * * * * * * * * * * * * * * *PAL


15.1. 3200K R_GAIN
   VIDEO OUT


 * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
<DEVICE>     :RAM0
<ADDRESS>    :0F8
<DATA>       :95-95

<MESSAGE>    :

<INSTRUCTION> ADJUST DATA BY ARROW-KEY, ROLLDOWN: PREVIOUS ITEM
 LOAD (F1)    QUIT (F3)     SAVE (F5)
```

Table 5-30

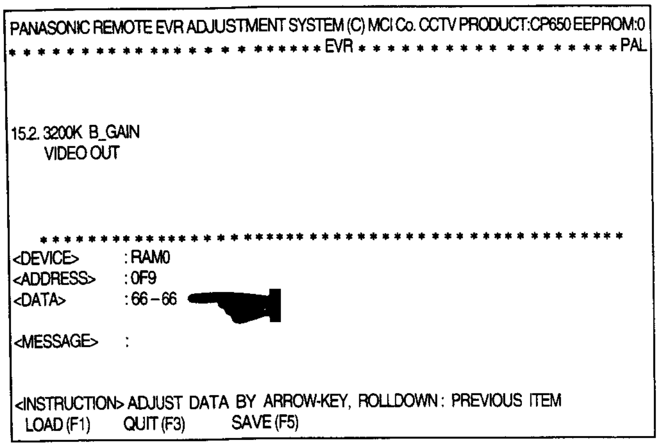
- Aim the Camera at the Colour Chip Chart.
- Return the Colour Temperature from the 6500K to 3200K.
- Adjust data with the **ARROW** keys so that the Red gain becomes 220 ± 5%.
- Press the **ENTER** key for next adjustment.

Note: Chrominance phase and gain are adjusted to proper position as shown in Fig. 5-21 and Table 5-33.

15.2. 3200K B_Gain Adjustment

Test Point: **CN5 (Video Output Connector)** **I/F Board**
Adjust: **RAMO (0F9)** **Main Board**

- The menu as shown in Table 5-31 will be displayed.



```
PANASONIC REMOTE EVR ADJUSTMENT SYSTEM (C) MCI Co. CCTV PRODUCT:CP650 EEPROM:0
* * * * * * * * * * * * * * * * * * * * * * * * EVR * * * * * * * * * * * * * * * * * * PAL


15.2. 3200K B_GAIN
     VIDEO OUT


 * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
<DEVICE>      : RAM0
<ADDRESS>     : 0F9
<DATA>        : 66-66

<MESSAGE>   :

<INSTRUCTION> ADJUST DATA BY ARROW-KEY, ROLLDOWN : PREVIOUS ITEM
  LOAD (F1)     QUIT (F3)      SAVE (F5)
```

Table 5-31

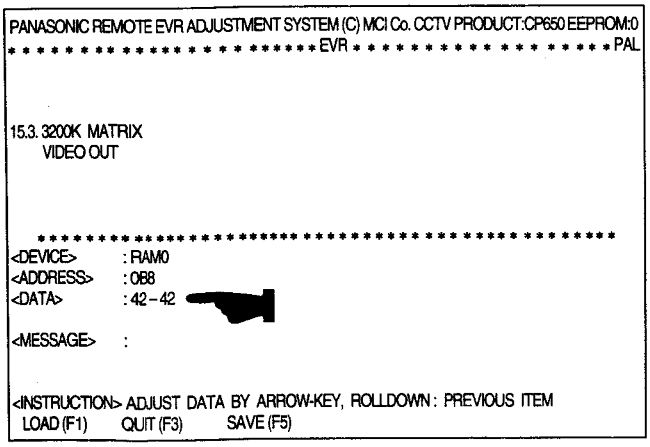
- Keep the Colour Temperature at 3200K.
- Adjust data with the **ARROW** keys so that the Yellow gain becomes 100 ± 5%.
- Press the **ENTER** key for next adjustment.

Note: Chrominance phase and gain are adjusted to proper position as shown in Fig. 5-21and Table 5-33.

15.3. 3200K Matrix Adjustment

Test Point: **CN5 (Video Output Connector)** **I/F Board**
Adjust: **RAMO (0B8)** **Main Board**

- The menu as shown in Table 5-32 will be displayed.



```
PANASONIC REMOTE EVR ADJUSTMENT SYSTEM (C) MCI Co. CCTV PRODUCT:CP650 EEPROM:0
* * * * * * * * * * * * * * * * * * * * * * * * EVR * * * * * * * * * * * * * * * * * * PAL


15.3. 3200K MATRIX
     VIDEO OUT


 * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
<DEVICE>      : RAM0
<ADDRESS>     : 0B8
<DATA>        : 42-42

<MESSAGE>   :

<INSTRUCTION> ADJUST DATA BY ARROW-KEY, ROLLDOWN : PREVIOUS ITEM
  LOAD (F1)     QUIT (F3)      SAVE (F5)
```

Table 5-32

- Keep the Colour Temperature at 3200K.
- Adjust data with the **ARROW** keys so that the Red vector phase becomes 108 ± 2°.
- Repeat adjust from steps **15.1** to **15.3** until both chrominance phase and gain are adjusted to proper position as shown in Fig. 5-21 and Table 5-33.

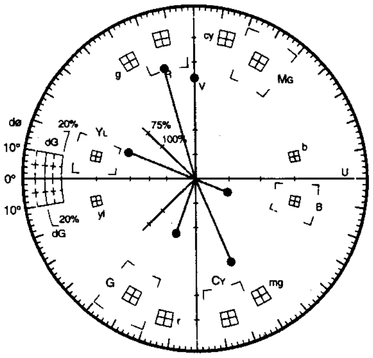


Fig. 5-21

	Red	Yellow
Phase	108 ± 2°	160 ± 5°
Gain	220 ± 5%	100 ± 5%

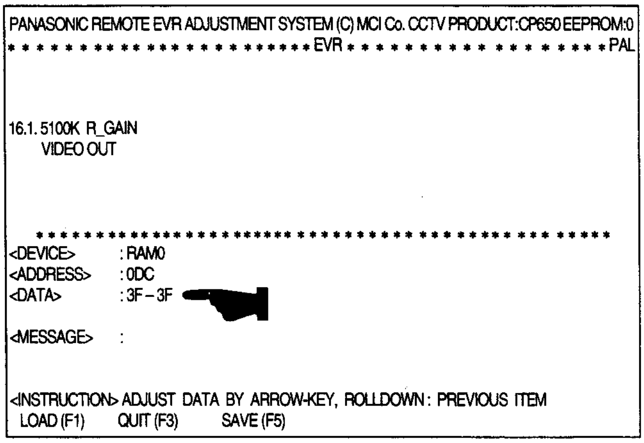
Table 5-33

- Press the **ENTER** key for next adjustment.

16.1. 5100K_R Gain Adjustment

Test Point: **CN5 (Video Output Connector)** **I/F Board**
Adjust: **RAMO (0DC)** **Main Board**

- The menu as shown in Table 5-34 will be displayed.



```
PANASONIC REMOTE EVR ADJUSTMENT SYSTEM (C) MCI Co. CCTV PRODUCT:CP650 EEPROM:0
* * * * * * * * * * * * * * * * * * * * * * * * EVR * * * * * * * * * * * * * * * * * * PAL


16.1. 5100K R_GAIN
     VIDEO OUT


 * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
<DEVICE>      : RAM0
<ADDRESS>     : 0DC
<DATA>        : 3F-3F

<MESSAGE>   :

<INSTRUCTION> ADJUST DATA BY ARROW-KEY, ROLLDOWN : PREVIOUS ITEM
  LOAD (F1)     QUIT (F3)      SAVE (F5)
```

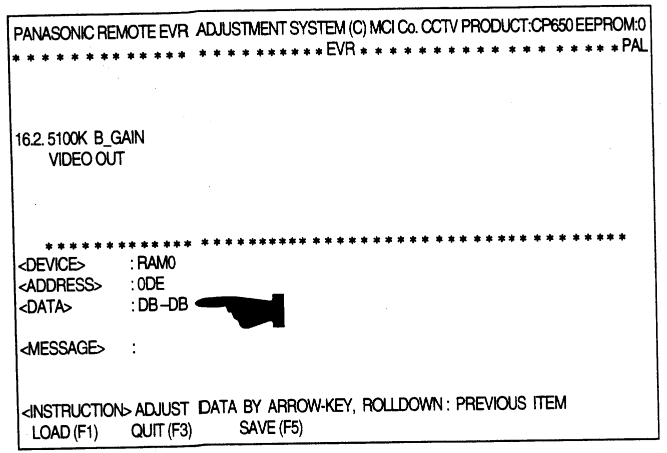
Table 5-34

- Aim the Camera at the Colour Chip Chart.
- Change the Colour Temperature from the 3200K to 5100K.
- Adjust data with the **ARROW** keys so that the Red Gain becomes 220 ± 5%.
- Press the **ENTER** key for next adjustment.

16.2. 5100K_B Gain Adjustment

Test Point: **CN5 (Video Output Connector)** **I/F Board**
Adjust: **RAM0 (0DE)** **Main Board**

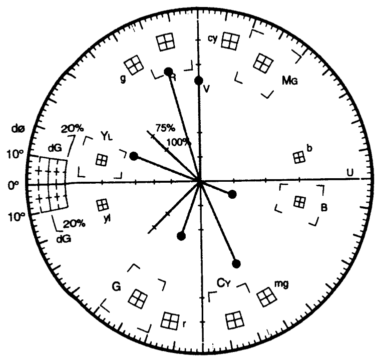
- The menu as shown in Table 5-35 will be displayed.



```
PANASONIC REMOTE EVR  ADJUSTMENT SYSTEM (C) MCI Co. CCTV PRODUCT:CP650 EEPROM:0
* * * * * * * * * * * * *  * * * * * * * * * * EVR * * * * * * * * * * * * * * * * * * * * PAL


16.2. 5100K B_GAIN
    VIDEO OUT


   * * * * * * * * * * * * *  * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
<DEVICE>      : RAM0
<ADDRESS>     : 0DE
<DATA>        : DB-DB

<MESSAGE>     :

<INSTRUCTION> ADJUST  DATA BY  ARROW-KEY, ROLLDOWN : PREVIOUS  ITEM
 LOAD (F1)      QUIT (F3)        SAVE (F5)
```

Table 5-35

- Keep the Colour Temperature at 5100K.
- Adjust data with the **ARROW** keys so that the Yellow Gain becomes 100 ± 5 %.
- Repeat adjust from steps **16.1** and **16.2** until both chrominance phase and gain are adjusted to proper position as shown in Fig. 5-22 and Table 5-36.



dθ
20%
YL
75%
100%
cy
Mg
b
U
B
10°
0°
10°
20%
dG
G
Cy
mg
V

Fig. 5-22

	Red	Yellow
Phase	108 ± 2°	160 ± 5°
Gain	220 ± 5%	100 ± 5%

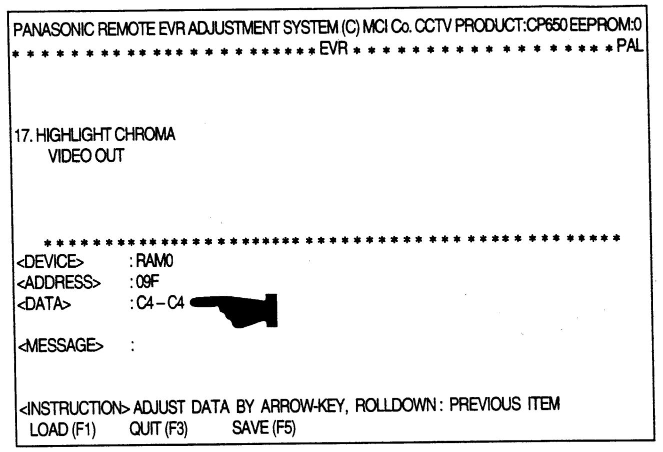
Table 5-36

- Press the **ENTER** key for next adjustment.

17. Highlight Chroma Clip Adjustment

Test Point: **CN5 (Video Output Connector)** **I/F Board**
Adjust: **RAM0 (09F)** **Main Board**

- The menu as shown in Table 5-37 will be displayed.



```
PANASONIC REMOTE EVR ADJUSTMENT SYSTEM (C) MCI Co. CCTV PRODUCT:CP650 EEPROM:0
* * * * * * * * * * * * * * * * * * * * * * * * * * EVR * * * * * * * * * * * * * * * * * * * * PAL


17. HIGHLIGHT CHROMA
    VIDEO OUT


   * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
<DEVICE>      : RAM0
<ADDRESS>     : 09F
<DATA>        : C4 - C4

<MESSAGE>     :

<INSTRUCTION> ADJUST  DATA  BY  ARROW-KEY,  ROLLDOWN : PREVIOUS  ITEM
 LOAD (F1)      QUIT (F3)        SAVE (F5)
```

Table 5-37

- Aim the Camera at the White Chart.
- Return the Colour Temparature from the 5100K to 3200K.
- Adjust data with the **ARROW** keys so that the false chrominance level becomes minimum as shown in Fig. 5-23.

Note: The Data of 09F should be adjust from FF, the first minimum point of the false chrominance signal is as adjusting point.

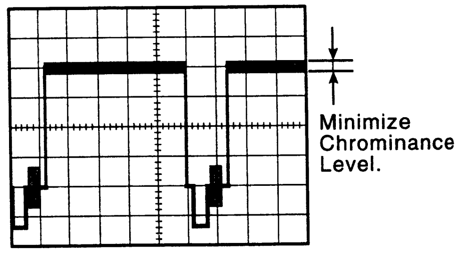
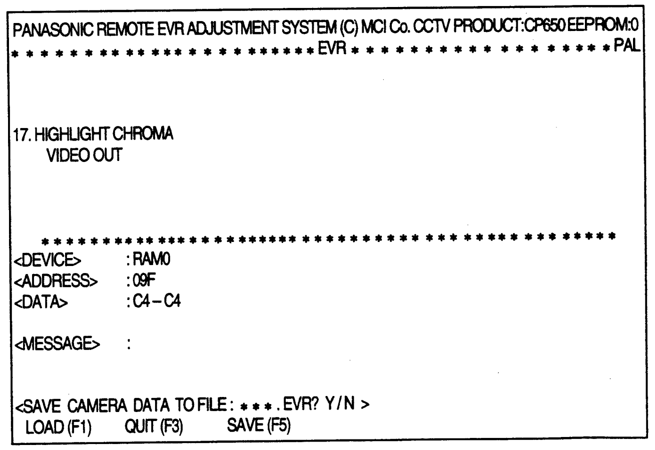


Fig. 5-23

- After completing of the adjustment, press the **QUIT (F3)** key, then the menu as shown in Table 5-38 will be displayed

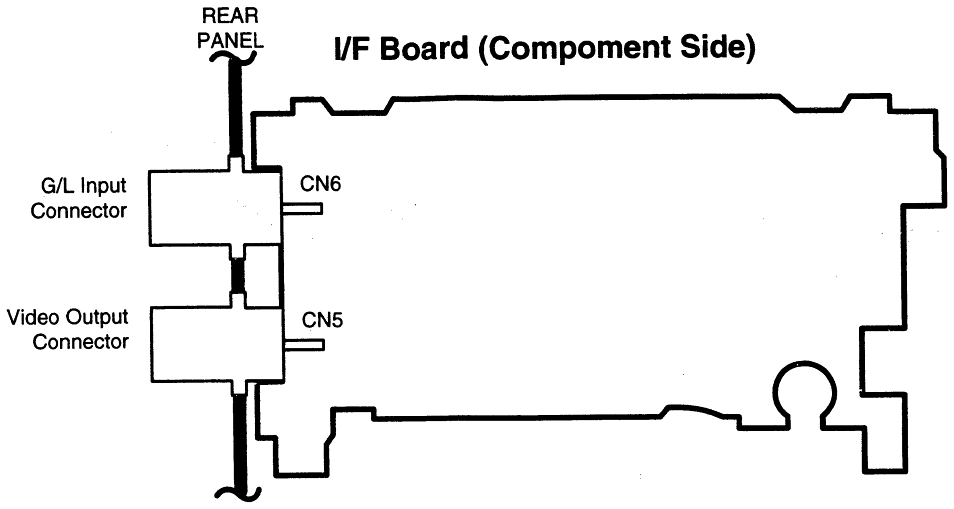


```
PANASONIC REMOTE EVR ADJUSTMENT SYSTEM (C) MCI Co. CCTV PRODUCT:CP650 EEPROM:0
* * * * * * * * * * * * * * * * * * * * * * * * * * EVR * * * * * * * * * * * * * * * * * * * * PAL


17. HIGHLIGHT CHROMA
    VIDEO OUT


   * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
<DEVICE>      : RAM0
<ADDRESS>     : 09F
<DATA>        : C4 - C4

<MESSAGE>     :

<SAVE  CAMERA  DATA  TO FILE : * * * . EVR?  Y / N >
 LOAD (F1)      QUIT (F3)        SAVE (F5)
```

Table 5-38

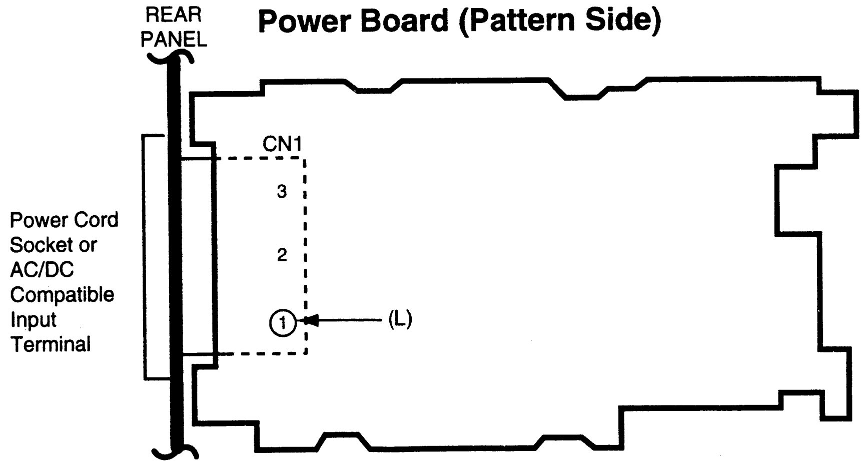
- Press the **N** key, and then press the **ENTER** key to finish of this adjustment procedure.

LOCATION OF TEST POINTS AND ADJUSTING CONTROLS



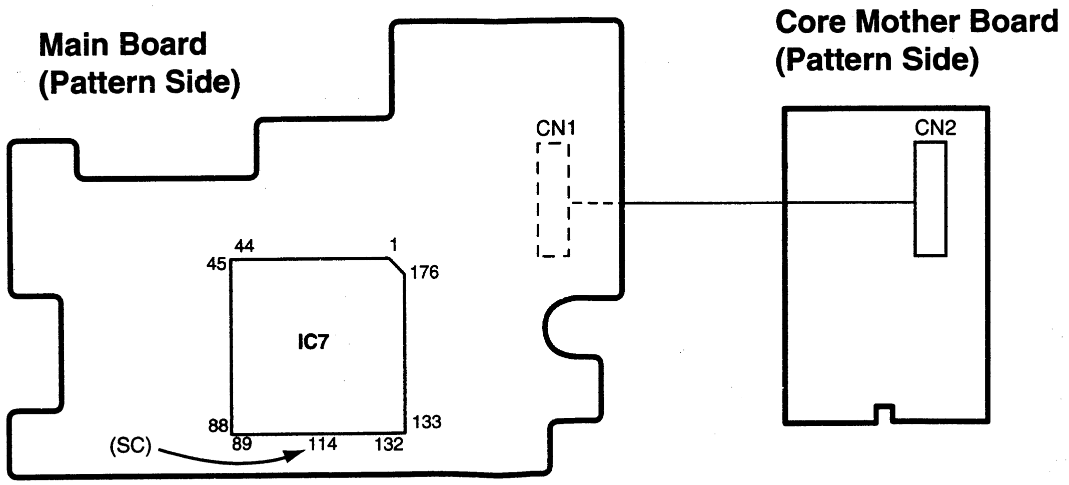
I/F Board (Compoment Side)

REAR
PANEL
G/L Input
Connector
CN6
Video Output
Connector
CN5



Power Board (Pattern Side)

REAR
PANEL
CN1
3
2
①
(L)
Power Cord
Socket or
AC/DC
Compatible
Input
Terminal



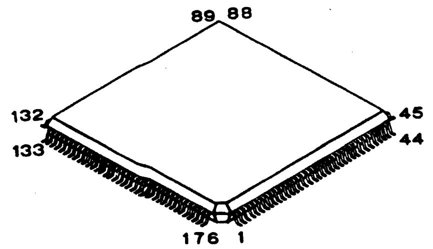
Main Board (Pattern Side)

Core Mother Board (Pattern Side)

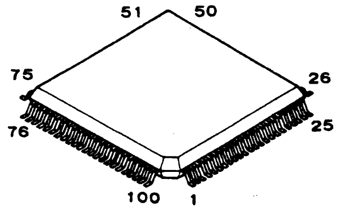
CN1
CN2
44
1
45
176
IC7
88
133
89
114
132
(SC)

APPEARANCE OF IC, TRANSISTOR AND DIODE

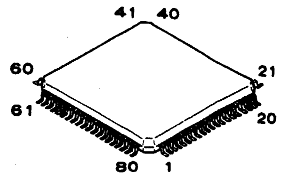
YWMN673521


89 88
132
133
45
44
176 1

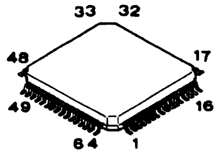
YWT93C4F9041
YWUPD97047GC


51 50
75
76
26
25
100 1

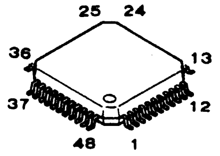
MN67353


41 40
60
61
21
20
80 1

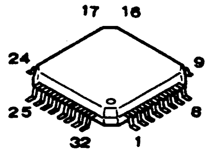
MN5278C


33 32
48
49
17
16
64 1

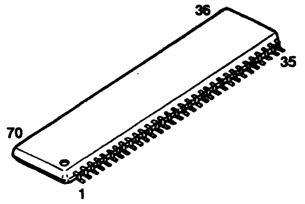
AN2108FHP
AN9DE01F


25 24
36
37
13
12
48 1

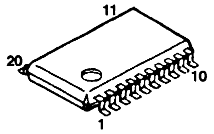
YWTDA8766GCS


17 16
24
25
9
8
32 1

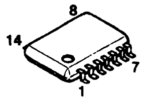
YWZA4035H



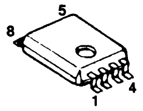
MN3112C
YWD6462GS905



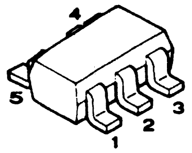
YWSN74LVC04Y



YWBR9040FT1
YWTC7W74F



YWTC7S04F
YWTC7S04FUL
YWTC7S08FUL
YWTC7S32F
TC7SH00FUL



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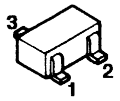
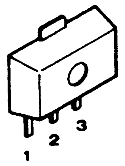
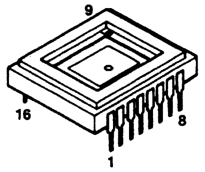
XC62AP4702MR



S81233PGT1



MN37281FE



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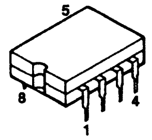
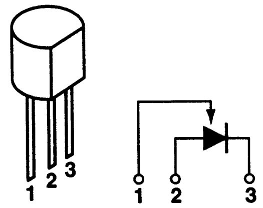
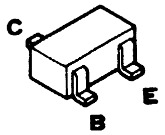


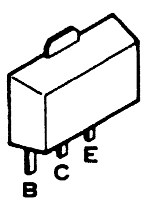
TA76431S



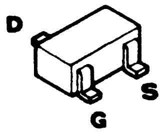
2SA1774
2SA1037
2SB1218A-QS
2SB1219-QRS
2SC2412-QRS
2SC4617
2SC4619
2SD1819-QRS
2SD1820-QRS



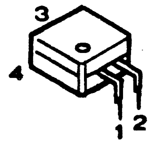
2SD874A-RD



2SK106945



PC817



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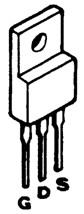
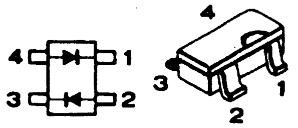
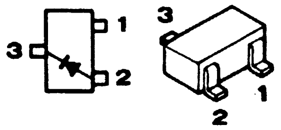


MA726



YWAD121



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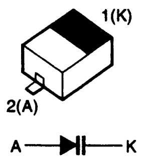
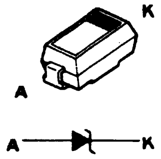
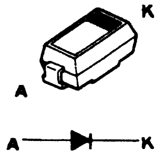
YWHVU359TRF



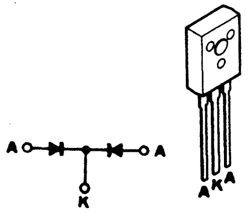
YWSK2012
YWSC80206L



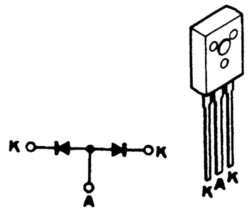
MA8091HTX
MA8150MTX



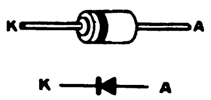
D10SC6M



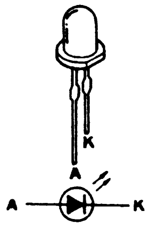
D10SC6MR



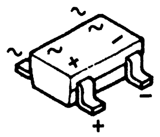
YWERA3410
P6KE180A



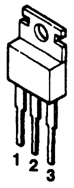
YWSLC22VR



DF06S



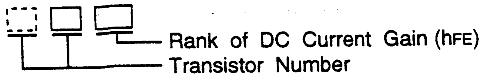
MIP160



CHIP COMPONENTS

1. Chip Transistor

The transistor number is indicated on the top surface of the chip transistor using two alphabet letters or one numerical number and two alphabet letters.



Transistor Number

(Chip Transistor)

Letter	Transistor No.	Letter	Transistor No.
A	2SB709	X	2SD602A
B	2SB709A	Y	2SD601
C	2SB710	Z	2SD601A
D	2SB710A	1A	2SB799
E	2SA1022	1B	2SB814
F	2SA1034	1C	2SB902
H	2SA1035	1F	2SK321
I	2SB792	1K	2SK316
K	2SC2778	1L	2SK247
P	2SD814	1M	2SJ84
Q	2SD813	1N	2SK199
R	2SC2480	1O	2SK198
S	2SC2405	1T	2SC3077
T	2SC2406	1X	2SC2845
U	2SC2404	1Z	2SD1030
V	2SC2295	2B	2SK374
W	2SD602	2C	2SK116
BQ	2SB766A	UMT	2SC4081

(Small Chip Transistor)

Letter	Transistor No.
A	2SB1218
B	2SB1218A
D	2SB1219A
U	2SC3931
W	2SD1820
X	2SD1820A
Y	2SD1819
E3	2SA1226
OS	2SB1219
UC	2SA1532
YU	2SC3938

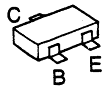
(Pair Transistor)

Letter	Transistor No.	Letter	Transistor No.
5R	XN1501	5H	XP4501
7S	XN1601	5C	XP4601
5H	XN4501	5H	XP4501
5C	XN4601	5L	XP5501
5L	XN5501	4N	XP5601
4N	XN5601	7S	XP6501
5N	XN6501	7W	XP6435
7W	XN6435	7F	XP6534
7F	XN6534	X1	UMX1
5R	XP1501	Z1	UMZ1
7S	XP1601		

Example WQ → 2SD602-Q
YQ → 2SD601-Q
1SB → 2SB814-S

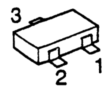
Appearance and Symbols

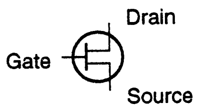
Transistor



C: Collector
B: Bass
E: Emitter

FET

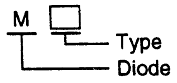




	1	2	3
Except 2SK199	Drain	Source	Gate
2SK199	Gate	Drain	Source

2. Chip Diode

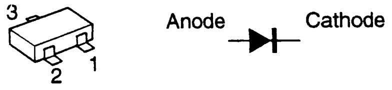
The diode number is indicated on the to surface of the chip diode using two alphabet letters.



Diode Number

	1	2	3
MA28/MA28W/MA28T	–	Anode	Cathode
MA151K/MA152K	–	Anode	Cathode
MA151A/MA152A	–	Cathode	Anode
MA151WK/MA152WK	Anode	Anode	Cathode
MA151WA/MA152WA	Cathode	Cathode	Anode
MA153	Cathode	Anode	Common
MA141K	–	Anode	Cathode
MA143	Anode	Cathode	Common
MA3062	Anode	–	Cathode
RD421D	Anode	–	Cathode

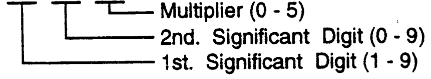
Appearance and Symbol



	1	2	3
MA28/MA28W/MA28T	–	Anode	Cathode
MA151K/MA152K	–	Anode	Cathode
MA151A/MA152A	–	Cathode	Anode
MA151WK/MA152WK	Anode	Anode	Cathode
MA151WA/MA152WA	Cathode	Cathode	Anode
MA153	Cathode	Anode	Common
MA141K	–	Anode	Cathode
MA143	Anode	Cathode	Common
MA3062	Anode	–	Cathode
RD421D	Anode	–	Cathode

3. Chip Resistor

The resistor value is indicated on the bottom surface of the chip resistor using three digit numbers.


Multiplier (0 - 5)
2nd. Significant Digit (0 - 9)
1st. Significant Digit (1 - 9)

Example:

330 → 33 x 100 = 33 Ω
561 → 56 x 101 = 560 Ω
123 → 12 x 103 = 12 kΩ

Note: Zero ohm resistor (jumper chip) is colored red or green.

4. Chip Capacitor

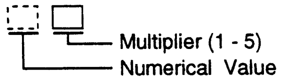
The capacitive value of replacement chip capacitor is indicated on the bottom surface. Original parts do not have value indication.

If the capacitive value is less than 100 pF, the value will be indicated by one or two digit number expressing the capacity directly in pF.

Example:

0.5 → 0.5 pF 2.5 → 2.5 pF
.75 → 0.75 pF 33 → 33 pF
1 → 1 pF 82 → 82 pF

If the capacitive value is 100 pF or greater, the value will be indicated by an alpha-numeric code. The letter precedes the number and expresses a numerical value to be multiplied by the number which follows.



Numerical Value

Letter	Value	Letter	Value
A	10	N	33
B	11	P	36
C	12	Q	39
D	13	R	43
E	15	S	47
F	16	T	51
G	18	U	56
H	20	V	62
J	22	W	68
K	24	X	75
L	27	Y	82
M	30	Z	91

*** Letters I and O are not used.**

Example: A1 → $10 \times 10^1 = 100$ pF
N2 → $33 \times 10^2 = 3300$ pF
S3 → $47 \times 10^3 = 47000$ pF.

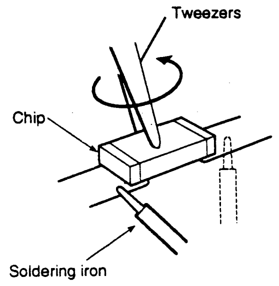
5. Precautions in replacing the chip component

1. Make sure that the unit is turned OFF when replacing the chip.
2. Use tweezers to prevent any damage to the chip surface.
3. Do not re-use the chips after removal.
4. Do not rub the electrode of chips.
5. Do not subject the chips to excessive stress.
6. It is recommended that a pencil-type soldering iron to be used.
7. The solder whose diameter is less than 0.5 mm is recommended.
8. Do not heat the chip beyond 3 second.
9. Maintain temperature control under 260°C (500°F) when soldering.

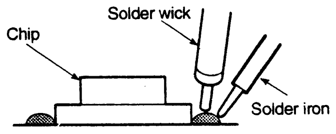
5-1. Removal (Transistor, Diode, Resistoe and Capacitor)

1. Add the solder to both ends of the chip (three leads for chip transistor).
2. While attaching the soldering iron to both ends of the chip (three leads for chip transistor) as shown below, remove the chip by turning with tweezere.

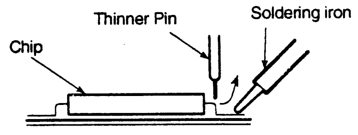
Note: Be careful not to damage other chips.



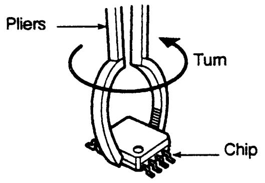
1. Add the solder wick and soldering iron to each lead of the IC and remove solder.



2. Add the soldering iron to each lead of the IC and left each lead of the IC using thinner pin.

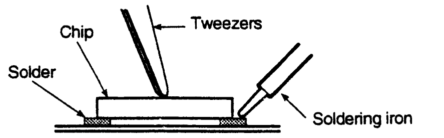


3. Remove IC turning it with pliers.

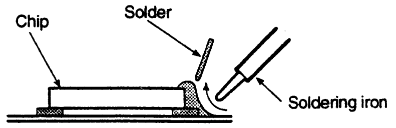


5-2. Mounting

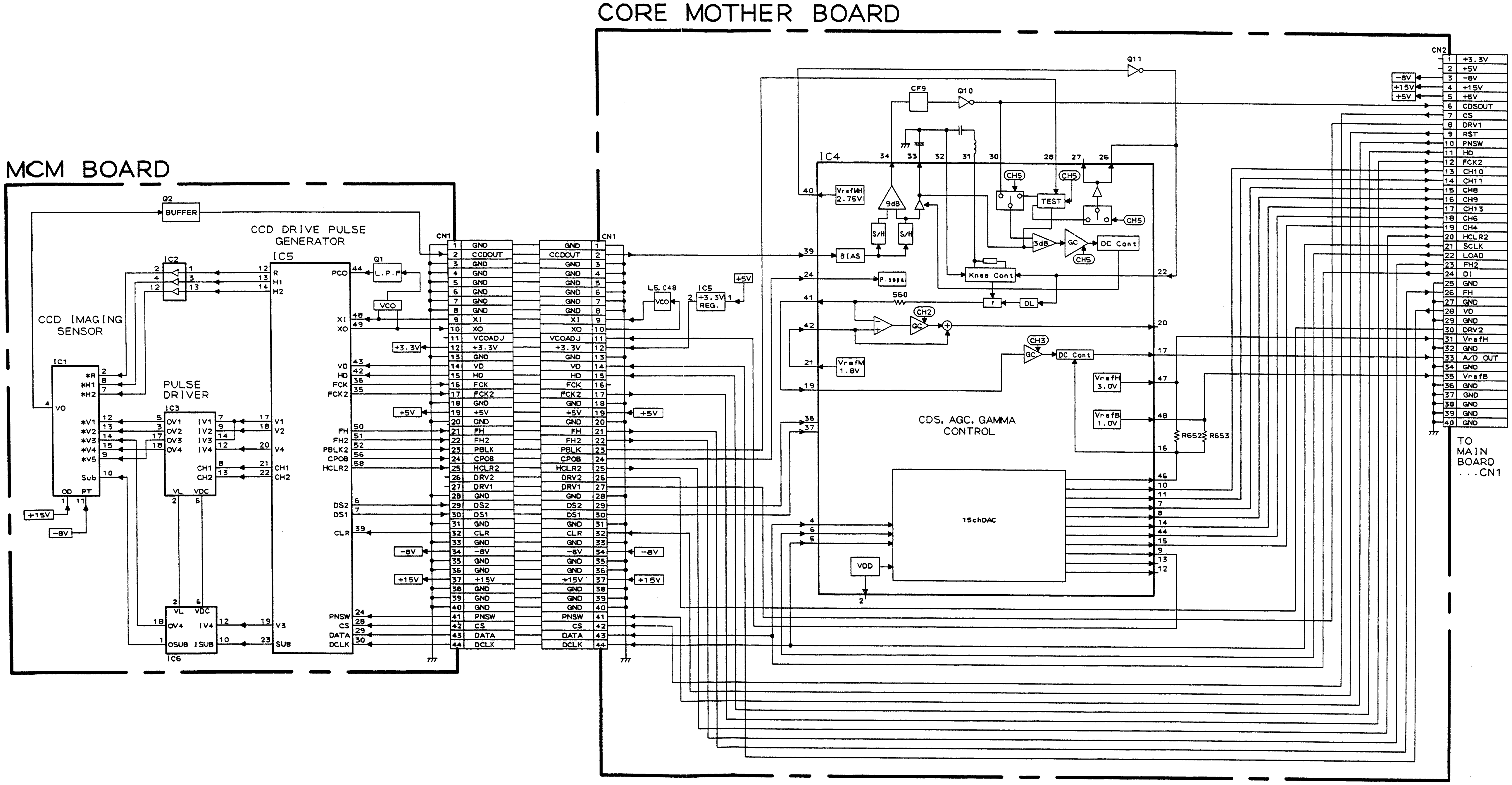
1. Place the solder thinly on the chip mounting foil.
2. Solder the chip temporarilu while holding the chip with the tweezers.



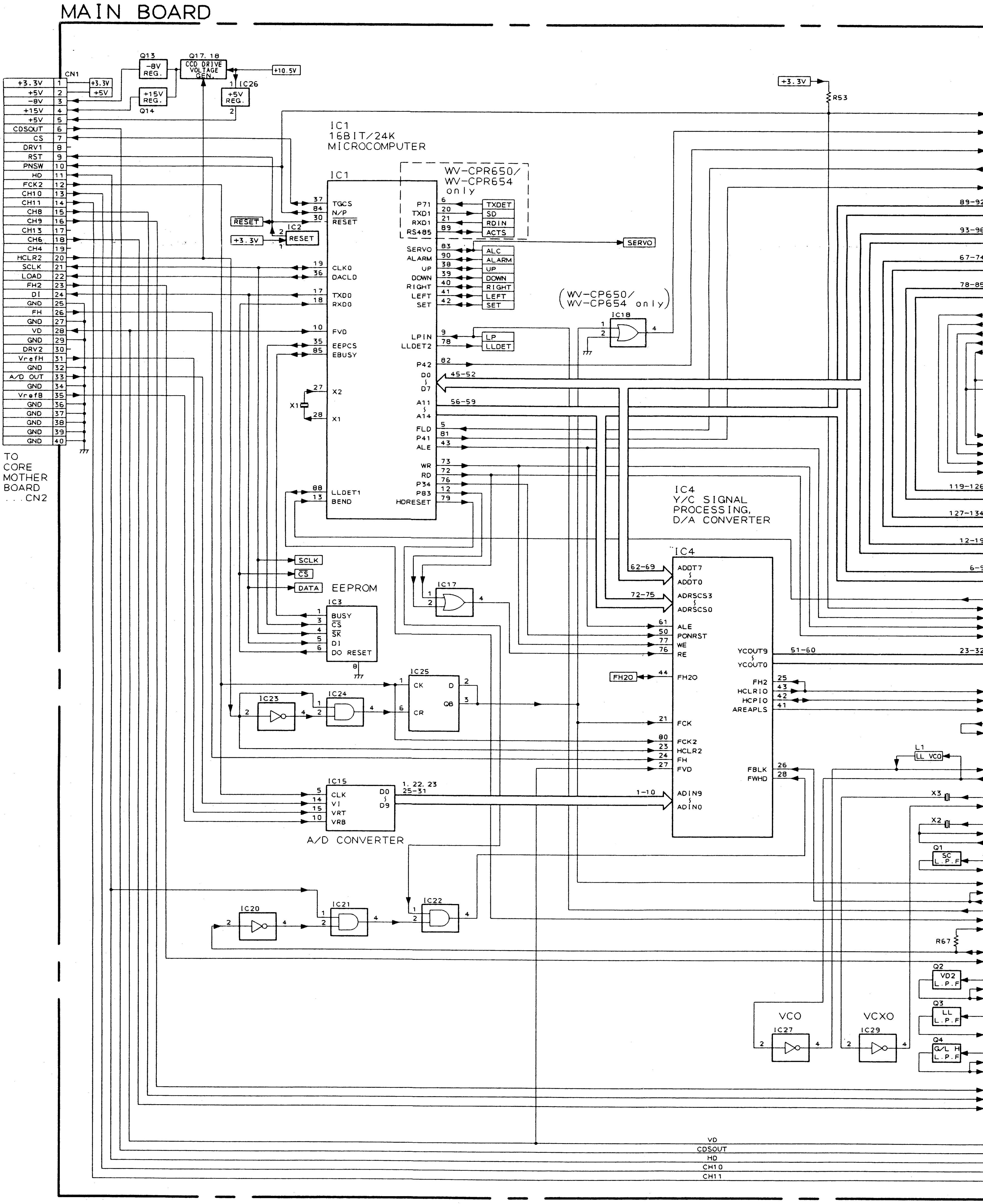
3. Solder both ends of chip (three leads for chip transistor).



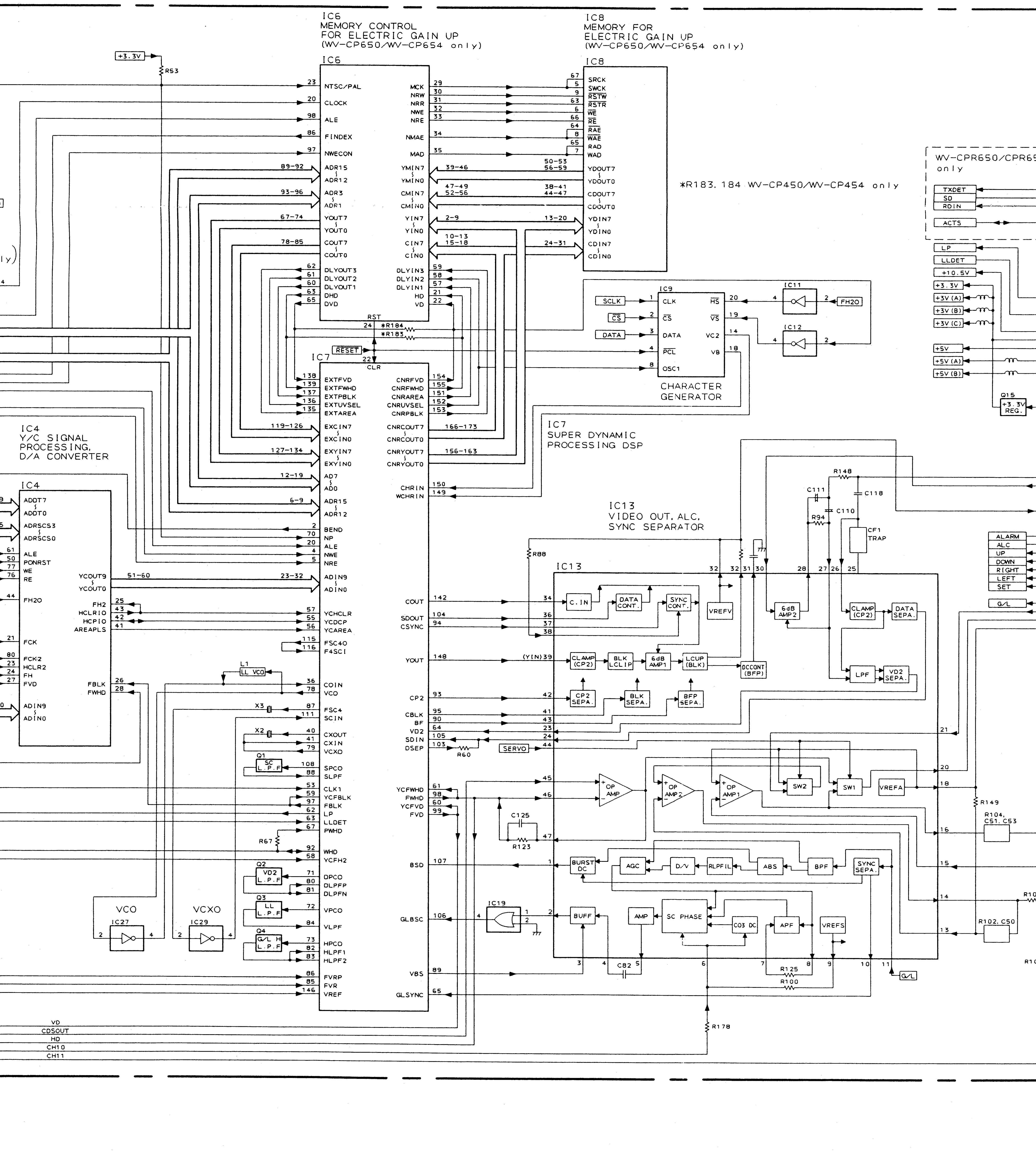
BLOCK DIAGRAM OF MCM BOARD / CORE MOTHER BOARD


CORE MOTHER BOARD
MCM BOARD
Q2
BUFFER
CCD DRIVE PULSE
GENERATOR
IC5
IC2
Q1
L.P.F
VCO
CCD IMAGING
SENSOR
IC1
VO
*R
*H1
*H2
*V1
*V2
*V3
*V4
*V5
Sub
OD
PT
+15V
-8V
PULSE
DRIVER
IC3
OV1
OV2
OV3
OV4
IV1
IV2
IV3
IV4
CH1
CH2
VL
VDC
IC6
OSUB
ISUB
R
H1
H2
PCO
XI
XO
VD
HD
FCK
FCK2
FH
FH2
PBLK2
CPOB
HCLR2
DS2
DS1
CLR
PNSW
CS
DATA
DCLK
V1
V2
V4
V3
SUB
+3.3V
+5V
-8V
+15V
CN1
1 GND
2 CCDOUT
3 GND
4 GND
5 GND
6 GND
7 GND
8 GND
9 XI
10 XO
11 VCOADJ
12 +3.3V
13 GND
14 VD
15 HD
16 FCK
17 FCK2
18 GND
19 +5V
20 GND
21 FH
22 FH2
23 PBLK
24 CPOB
25 HCLR2
26 DRV2
27 DRV1
28 GND
29 DS2
30 DS1
31 GND
32 CLR
33 GND
34 -8V
35 GND
36 GND
37 +15V
38 GND
39 GND
40 GND
41 PNSW
42 CS
43 DATA
44 DCLK
L5, C48
VCO
IC5
+3.3V
REG.
Q11
CF9
Q10
IC4
VrefMH
2.75V
9dB
S/H
S/H
BIAS
CH5
TEST
3dB
GC
DC Cont
Knee Cont
DL
560
CH2
CH3
VrefM
1.8V
VrefH
3.0V
VrefB
1.0V
R652
R653
CDS, AGC, GAMMA
CONTROL
15chDAC
VDD
CN2
1 +3.3V
2 +5V
3 -8V
4 +15V
5 +5V
6 CDSOUT
7 CS
8 DRV1
9 RST
10 PNSW
11 HD
12 FCK2
13 CH10
14 CH11
15 CH8
16 CH9
17 CH13
18 CH6
19 CH4
20 HCLR2
21 SCLK
22 LOAD
23 FH2
24 DI
25 GND
26 FH
27 GND
28 VD
29 GND
30 DRV2
31 VrefH
32 GND
33 A/D OUT
34 GND
35 VrefB
36 GND
37 GND
38 GND
39 GND
40 GND
TO
MAIN
BOARD
...CN1

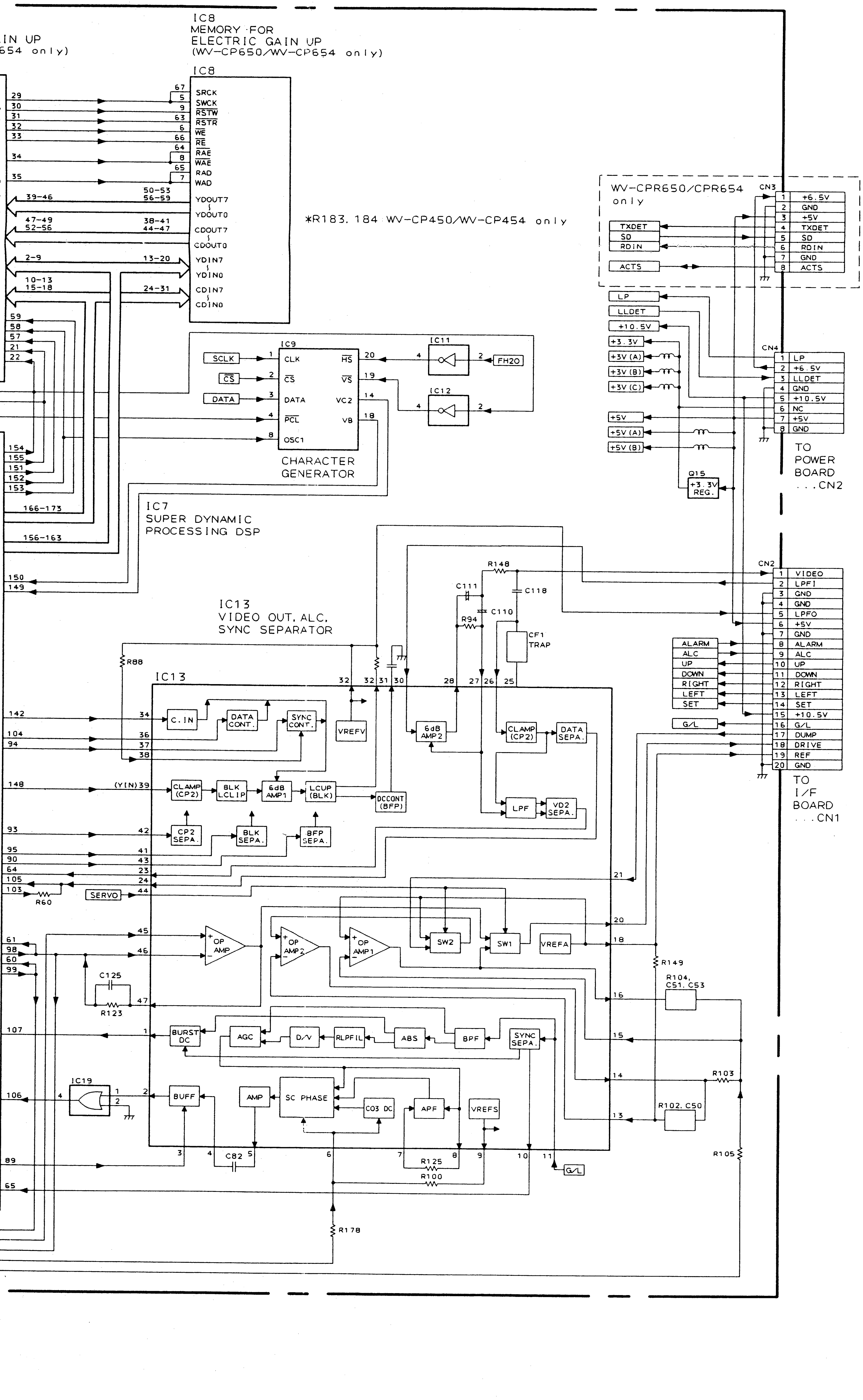
BLOCK DIAGRA


MAIN BOARD
CN1
+3.3V 1
+5V 2
-8V 3
+15V 4
+5V 5
CDSOUT 6
CS 7
DRV1 8
RST 9
PNSW 10
HD 11
FCK2 12
CH10 13
CH11 14
CH8 15
CH9 16
CH13 17
CH6 18
CH4 19
HCLR2 20
SCLK 21
LOAD 22
FH2 23
DI 24
GND 25
FH 26
GND 27
VD 28
GND 29
DRV2 30
VrefH 31
GND 32
A/D OUT 33
GND 34
VrefB 35
GND 36
GND 37
GND 38
GND 39
GND 40
TO CORE MOTHER BOARD ... CN2
Q13
-8V REG.
Q14
+15V REG.
Q17, 18
CCD DRIVE VOLTAGE GEN.
+10.5V
IC26
+5V REG.
+3.3V
+5V
IC1
16BIT/24K MICROCOMPUTER
TGCS
N/P
RESET
CLK0
DACLD
TXD0
RXD0
FVD
EEPCS
EBUSY
X2
X1
LLDET1
BEND
WV-CPR650/ WV-CPR654 only
P71
TXD1
RXD1
RS485
TXDET
SD
RDIN
ACTS
SERVO
ALARM
UP
DOWN
RIGHT
LEFT
SET
ALC
LPIN
LLDET2
LP
LLDET
P42
D0 ~ D7
45-52
A11 ~ A14
56-59
FLD
P41
ALE
WR
RD
P34
P83
HDRESET
RESET
IC2
(WV-CP650/ WV-CP654 only)
IC18
R53
IC4
Y/C SIGNAL PROCESSING, D/A CONVERTER
ADDT7 ~ ADDT0
62-69
ADRSCS3 ~ ADRSCS0
72-75
ALE
PONRST
WE
RE
FH2O
FCK
FCK2
HCLR2
FH
FVD
ADIN9 ~ ADIN0
1-10
YCOUT9 ~ YCOUT0
51-60
FH2
HCLR1O
HCP1O
AREAPLS
FBLK
FWHD
89-92
93-96
67-74
78-85
119-126
127-134
12-19
6-9
23-32
SCLK
CS
DATA
EEPROM
IC3
BUSY
CS
SK
DI
DO RESET
IC17
IC23
IC24
IC25
CK
D
Q8
CR
IC15
CLK
VI
VRT
VRB
D0 ~ D9
1, 22, 23 25-31
A/D CONVERTER
IC20
IC21
IC22
L1
LL VCO
X3
X2
Q1
SC L.P.F
R67
Q2
VD2 L.P.F
Q3
LL L.P.F
Q4
G/L H L.P.F
VCO
IC27
VCXO
IC29
VD
CDSOUT
HD
CH10
CH11

BLOCK DIAGRAM OF MAIN BOARD

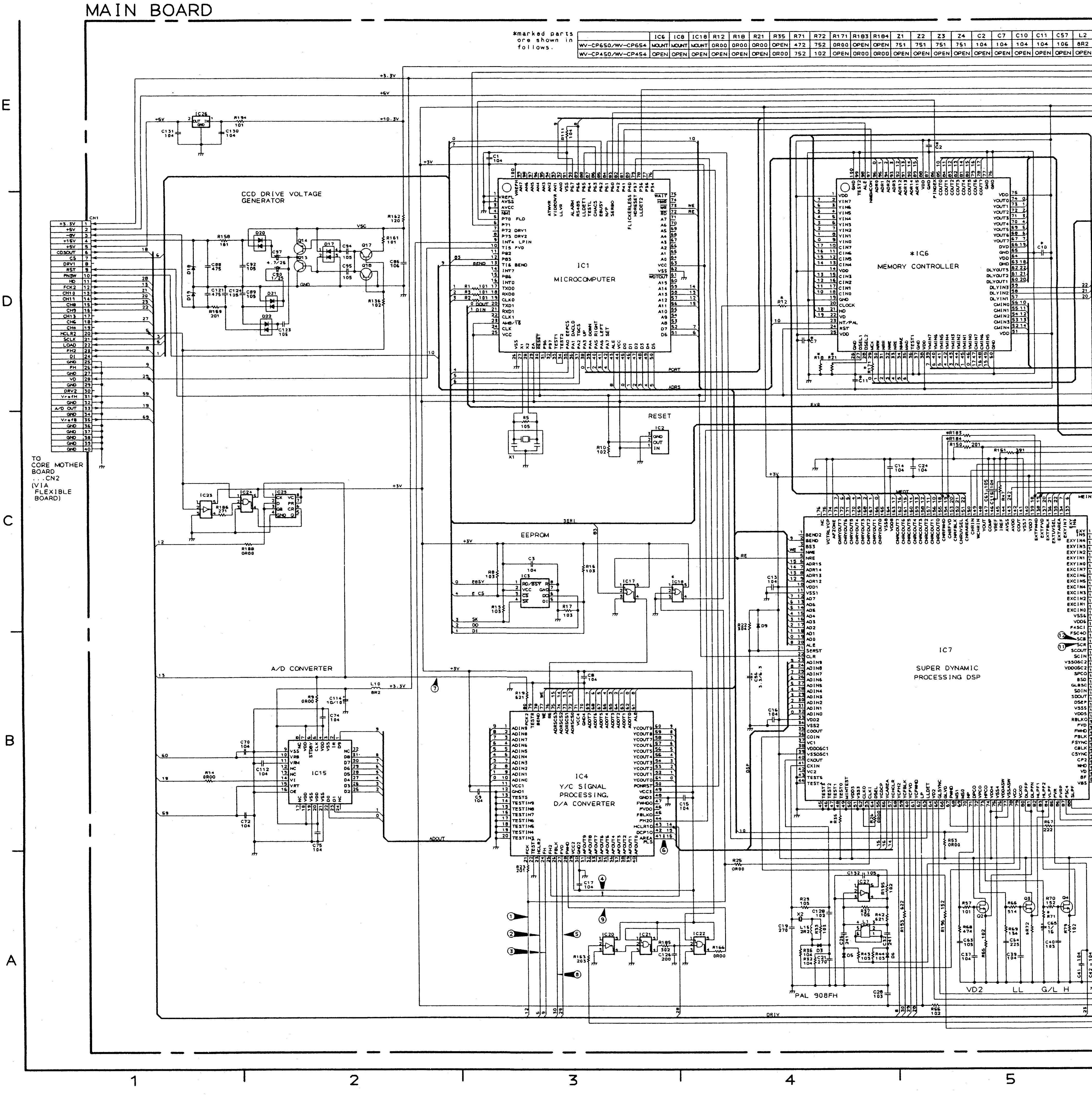

IC6
MEMORY CONTROL
FOR ELECTRIC GAIN UP
(WV-CP650/WV-CP654 only)
IC8
MEMORY FOR
ELECTRIC GAIN UP
(WV-CP650/WV-CP654 only)
*R183, 184 WV-CP450/WV-CP454 only
WV-CPR650/CPR65
only
TXDET
SD
RDIN
ACTS
LP
LLDET
+10.5V
+3.3V
+3V (A)
+3V (B)
+3V (C)
+5V
+5V (A)
+5V (B)
Q15
+3.3V REG.
IC9
CHARACTER
GENERATOR
IC11
IC12
FH20
SCLK
CS
DATA
RESET
IC7
SUPER DYNAMIC
PROCESSING DSP
IC4
Y/C SIGNAL
PROCESSING,
D/A CONVERTER
IC13
VIDEO OUT, ALC,
SYNC SEPARATOR
C.IN
DATA CONT.
SYNC CONT.
VREFV
6dB AMP2
CLAMP (CP2)
DATA SEPA.
CLAMP (CP2)
BLK LCLIP
6dB AMP1
LCUP (BLK)
DCCONT (BFP)
LPF
VD2 SEPA.
CP2 SEPA.
BLK SEPA.
BFP SEPA.
SERVO
OP AMP
OP AMP2
OP AMP1
SW2
SW1
VREFA
BURST DC
AGC
D/V
RLPFIL
ABS
BPF
SYNC SEPA.
BUFF
AMP
SC PHASE
C03 DC
APF
VREFS
IC19
CF1 TRAP
ALARM
ALC
UP
DOWN
RIGHT
LEFT
SET
G/L
VCO
IC27
VCXO
IC29
L1
LL VCO
X3
X2
Q1 SC L.P.F
Q2 VD2 L.P.F
Q3 LL L.P.F
Q4 G/L H L.P.F
VD
CDSOUT
HD
CH10
CH11
R178
R125
R100
C82
R104, C51, C53
R102, C50
R149
R148
C111
C118
C110
R94
R88
R123
C125
R67
R60
R53

OARD



IN UP
654 only)
IC8
MEMORY FOR
ELECTRIC GAIN UP
(WV-CP650/WV-CP654 only)
IC8
SRCK
SWCK
RSTW
RSTR
WE
RE
RAE
WAE
RAD
WAD
YDOUT7 ~ YDOUT0
CDOUT7 ~ CDOUT0
YDIN7 ~ YDIN0
CDIN7 ~ CDIN0
*R183, 184 WV-CP450/WV-CP454 only
WV-CPR650/CPR654 only
CN3
+6.5V
GND
+5V
TXDET
SD
RDIN
GND
ACTS
LP
LLDET
+10.5V
+3.3V
+3V (A)
+3V (B)
+3V (C)
+5V
+5V (A)
+5V (B)
CN4
LP
+6.5V
LLDET
GND
+10.5V
NC
+5V
GND
TO POWER BOARD ...CN2
Q15
+3.3V REG.
IC9
SCLK
CS
DATA
PCL
OSC1
CLK
HS
VS
VC2
VB
IC11
IC12
FH20
CHARACTER GENERATOR
IC7
SUPER DYNAMIC PROCESSING DSP
IC13
VIDEO OUT, ALC, SYNC SEPARATOR
R88
R148
C111
C118
R94
C110
CF1 TRAP
CN2
VIDEO
LPFI
GND
GND
LPFO
+5V
GND
ALARM
ALC
UP
DOWN
RIGHT
LEFT
SET
+10.5V
G/L
DUMP
DRIVE
REF
GND
TO I/F BOARD ...CN1
C.IN
DATA CONT.
SYNC CONT.
VREFV
6dB AMP2
CLAMP (CP2)
DATA SEPA.
CLAMP (CP2)
BLK LCLIP
6dB AMP1
LCUP (BLK)
DCCONT (BFP)
LPF
VD2 SEPA.
CP2 SEPA.
BLK SEPA.
BFP SEPA.
SERVO
R60
OP AMP
OP AMP2
OP AMP1
SW2
SW1
VREFA
R149
R104, C51, C53
C125
R123
BURST DC
AGC
D/V
RLPFIL
ABS
BPF
SYNC SEPA.
R103
IC19
BUFF
AMP
SC PHASE
C03 DC
APF
VREFS
R102, C50
R105
C82
R125
R100
G/L
R178
(Y IN) 39

SCHEMATIC DIAGRA

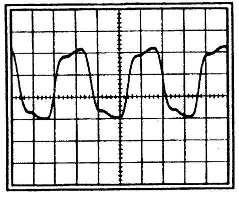

MAIN BOARD
E
D
C
B
A
1
2
3
4
5
CCD DRIVE VOLTAGE GENERATOR
IC1 MICROCOMPUTER
*IC6 MEMORY CONTROLLER
IC7 SUPER DYNAMIC PROCESSING DSP
IC4 Y/C SIGNAL PROCESSING, D/A CONVERTER
IC15
A/D CONVERTER
EEPROM
RESET
IC2
IC3
IC17
IC18
IC20
IC21
IC22
IC23
IC24
IC25
IC26
IC27
X1
X2
TO CORE MOTHER BOARD ...CN2 (VIA FLEXIBLE BOARD)
CN1
PAL 908FH
VD2
LL
G/L H
DRIV
PORT
ADRS
EVR
SERI
ADOUT
+3.3V
+5V
+6V
+10.3V
-8V
+15V
VSC
GND
CDSOUT
CS
DRV1
RST
PNSW
HD
FCK2
CH10
CH11
CH8
CH9
CH6
CH13
HCLR2
SCLK
LOAD
PH2
DI
FH
VD
DRV2
VrefH
A/D OUT
Vref8

*marked parts are shown in follows.

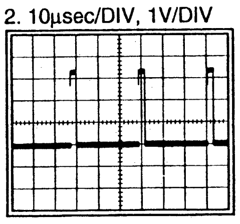
	IC6	IC8	IC18	R12	R18	R21	R35	R71	R72	R171	R183	R184	Z1	Z2	Z3	Z4	C2	C7	C10	C11	C57	L2
WV-CP650/WV-CP654	MOUNT	MOUNT	MOUNT	0R00	0R00	0R00	OPEN	472	752	0R00	OPEN	OPEN	751	751	751	751	104	104	104	104	106	8R2
WV-CP450/WV-CP454	OPEN	OPEN	OPEN	OPEN	OPEN	OPEN	0R00	752	102	OPEN	0R00	0R00	OPEN	OPEN	OPEN	OPEN	OPEN	OPEN	OPEN	OPEN	OPEN	OPEN

<Waveform> MAIN BORD

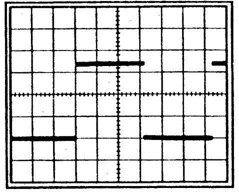
1. 20nsec/DIV, 1V/DIV



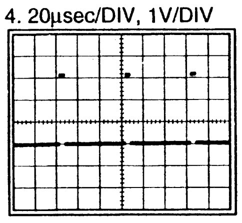
2. 10μsec/DIV, 1V/DIV



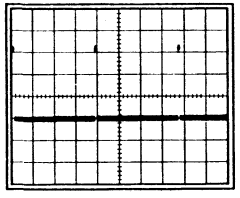
3. 10μsec/DIV, 1V/DIV



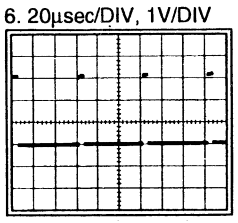
4. 20μsec/DIV, 1V/DIV



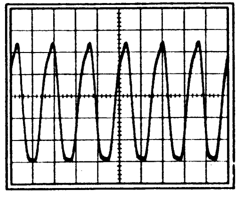
5. 5msec/DIV, 1V/DIV



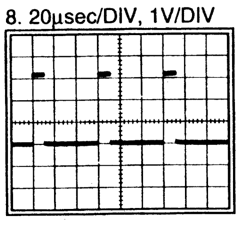
6. 20μsec/DIV, 1V/DIV



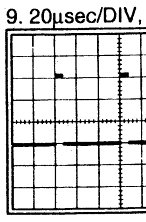
7. 20nsec/DIV, 1V/DIV



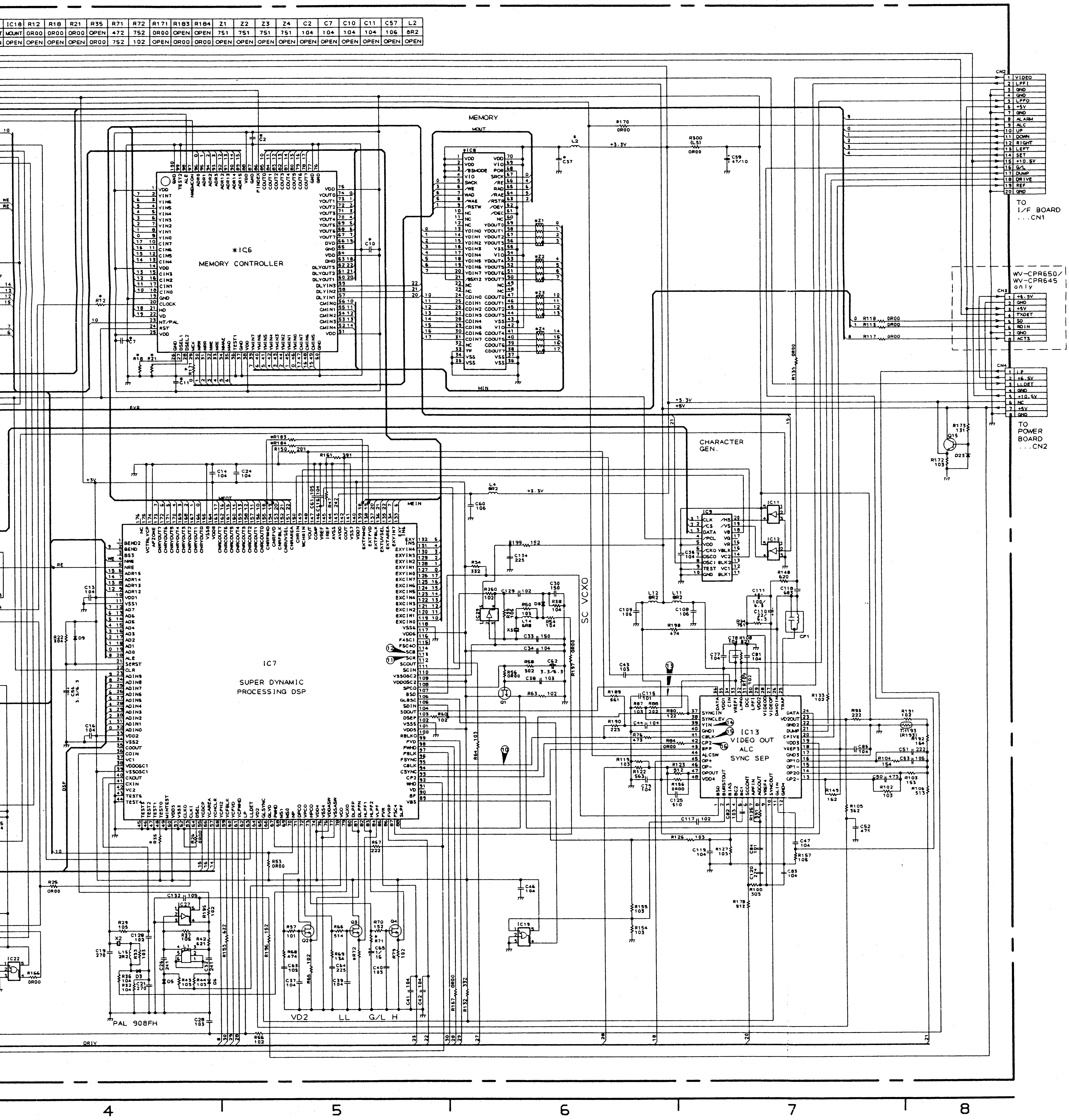
8. 20μsec/DIV, 1V/DIV



9. 20μsec/DIV,



SCHEMATIC DIAGRAM OF MAIN BOARD


MEMORY
*IC8
*IC6
MEMORY CONTROLLER
IC7
SUPER DYNAMIC PROCESSING DSP
SC VCXO
CHARACTER GEN.
IC9
IC11
IC12
IC13
VIDEO OUT
ALC
SYNC SEP
IC19
IC22
PAL 908FH
VD2
LL
G/L H
CN2
TO I/F BOARD ...CN1
WV-CPR650/
WV-CPR645
only
CN3
CN4
TO POWER BOARD ...CN2
4
5
6
7
8

IC18	R12	R18	R21	R35	R71	R72	R171	R183	R184	Z1	Z2	Z3	Z4	C2	C7	C10	C11	C57	L2
MOUNT	0R00	0R00	0R00	OPEN	472	752	0R00	OPEN	OPEN	751	751	751	751	104	104	104	104	106	8R2
OPEN	OPEN	OPEN	OPEN	0R00	752	102	OPEN	0R00	0R00	OPEN	OPEN	OPEN	OPEN	OPEN	OPEN	OPEN	OPEN	OPEN	OPEN

Note: The value

□ □ □

<Example>

For Resistor:

330 → 33

561 → 56

123 → 12

0R00 = 0 Ω

<Voltage>

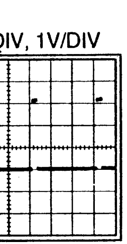
MAIN BOARD

	IC1	IC4
Pin 1	0	0.2
2	0	0.6
3	3.3	0.4
4	3.3	1.9
5	3.3	1.1
6	3.3	1.1
7	0	1.5
8	0	1.4
9	0	1.3
10	0	1.4
11	0.4	3.3
12	2.9	0
13	1.1	0
14	3.3	0
15	3.3	0
16	3.3	0
17	3.3	0
18	0.3	0
19	3.3	0
20	3.3	0
21	3.3	1.6
22	3.3	0
23	3.3	0.3
24	1.2	1.6
25	3.3	0.3
26	0	0.8
27	1.4	0
28	3.3	0.4
29	3.3	3.3
30	1.0	0
31	1.0	0
32	0.6	0
33	1.5	1.2
34	1.5	1.6
35	3.3	1.6
36	0	1.7
37	3.3	1.6
38	0	1.6
39	0	1.5
40	0	1.5
41	0	0
42	0	0
43	0.2	0.3
44	3.3	0.3

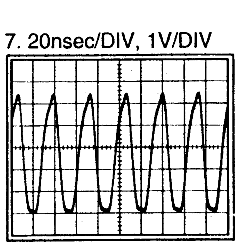
	IC2	IC26
Pin 1	3.3	6.2
2	3.3	4.7
3	0	0
4		
5		
6		
7		
8		

	IC9
Pin 1	3.3
2	3.3
3	3.3
4	3.3
5	3.3
6	0
7	0
8	1.5
9	0
10	0
11	0
12	0
13	0
14	0
15	0
16	0
17	0
18	0
19	3.2
20	3.1

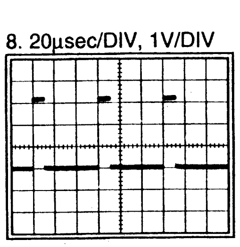
DIV, 1V/DIV



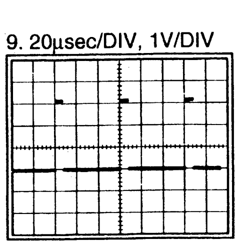
7. 20nsec/DIV, 1V/DIV



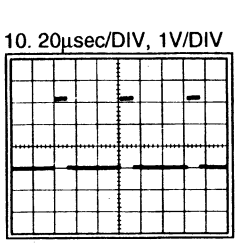
8. 20μsec/DIV, 1V/DIV



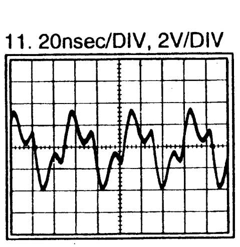
9. 20μsec/DIV, 1V/DIV



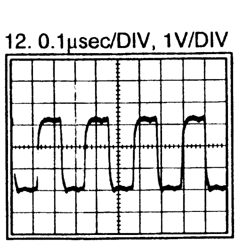
10. 20μsec/DIV, 1V/DIV



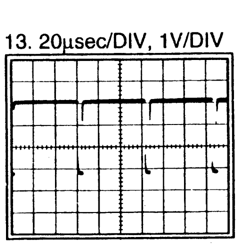
11. 20nsec/DIV, 2V/DIV



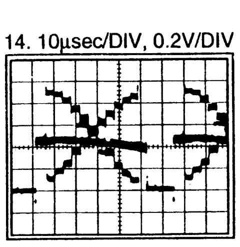
12. 0.1μsec/DIV, 1V/DIV



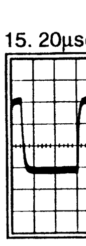
13. 20μsec/DIV, 1V/DIV



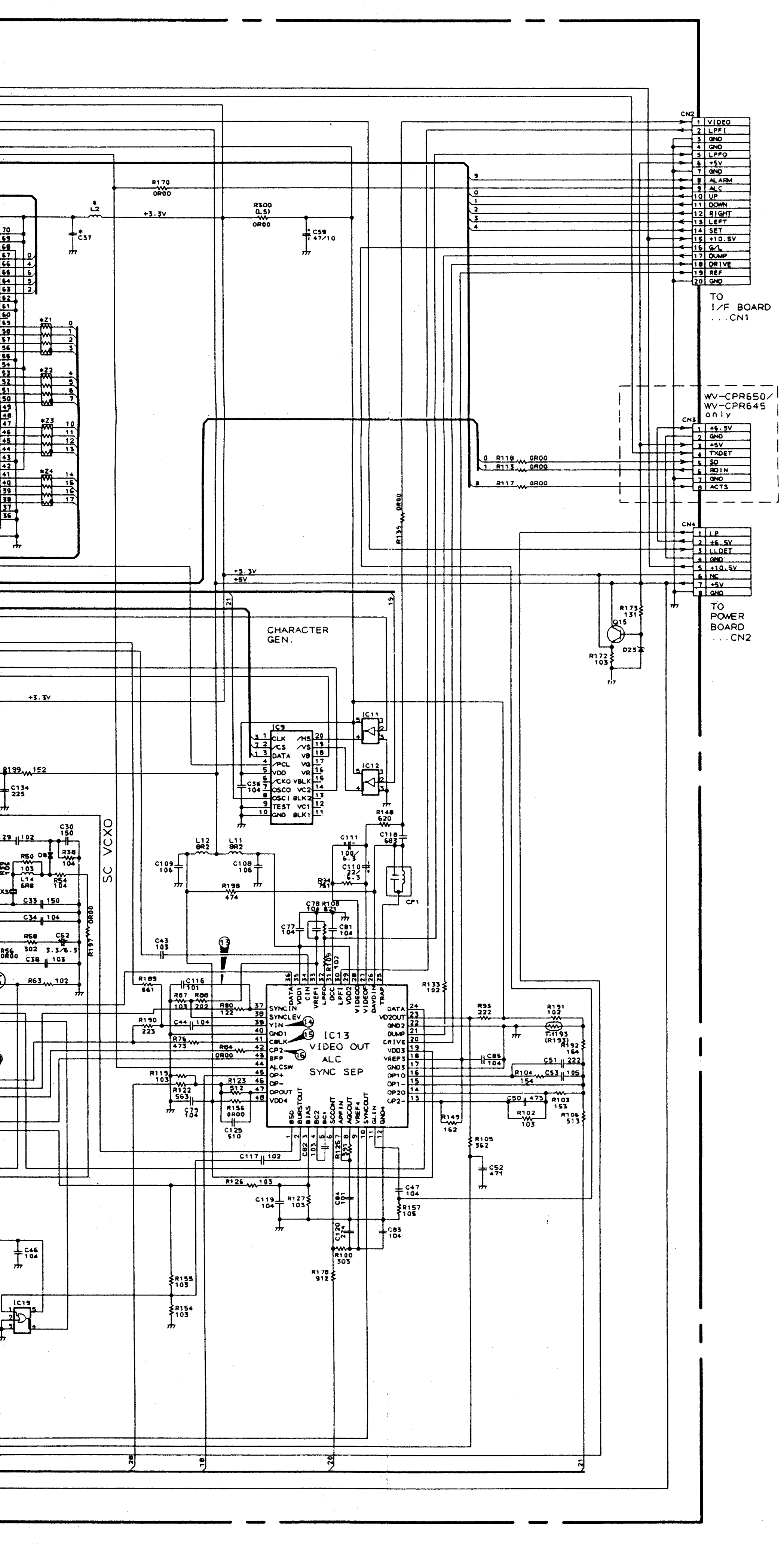
14. 10μsec/DIV, 0.2V/DIV



15. 20μs



MAIN BOARD



<Index>

MAIN BOARD

IC1	D3	Q1	B6
IC2	C3	Q2	A5
IC3	C3	Q3	A5
IC4	B3	Q4	A5
IC6	D5	Q13	D2
IC7	B5	Q14	D2
IC8	E6	Q15	C8
IC9	C7	Q17	D2
IC11	C7	Q18	D2
IC12	C7	D3	A4
IC13	B7	D5	A4
IC15	B2	D6	A4
IC17	C3	D8	C6
IC18	C3	D9	C4
IC19	A6	D17	D2
IC20	A3	D18	D1
IC21	A3	D19	D1
IC22	A4	D20	D2
IC23	C1	D21	D2
IC24	C2	D22	D2
IC25	C2	D23	C8
IC26	E1		
IC27	A4		
IC29	C6		

Note: The value indicated in the schematic diagram should be read as follows:

□ □ □
Multiplier (0 - 5)
2nd. Significant Digit (0 - 9)
1st. Siginificant Digit (1 - 9)

<Example>

For Resistor:

330 → 33×10^0 = 33 Ω
561 → 56×10^1 = 560 Ω
123 → 12×10^3 = 12k Ω
0R00 = 0 Ω

For Capacitor:

820 → 82×10^0 = 82 pF
102 → 10×10^2 = 1000 pF = 0.001 μF
104 → 10×10^4 = 100000 pF = 0.1 μF
The suffix attached to capacitance indicates a type of capacitor.

<Voltage>

MAIN BOARD

	IC1	IC4	IC7		IC1	IC4	IC7		IC1	IC7		IC7
Pin 1	0	0.2	1.1	Pin 45	1.5	0.8	0	Pin 89	0	0	Pin133	0
2	0	0.6	1.3	46	1.2	0	0	90	0	0	134	0
3	3.3	0.4	3.3	47	1.0	0.5	0	91	0	0	135	0
4	3.3	1.9	3.3	48	1.0	0	3.3	92	0.9	0.5	136	0
5	3.3	1.1	3.3	49	1.6	3.3	0	93	0.9	0	137	0
6	3.3	1.1	0.4	50	1.3	3.3	3.3	94	0.9	3.0	138	0
7	0	1.5	0.4	51	1.2	1.5	0	95	0.8	0.8	139	0.5
8	0	1.4	0	52	1.2	1.5	1.6	96	0.8	3.0	140	3.3
9	0	1.3	0.6	53	0.6	1.5	1.6	97	1.0	0.8	141	0
10	0	1.4	3.3	54	2.1	1.6	0	98	1.0	0.5	142	1.1
11	0.4	3.3	0	55	0.5	1.5	0	99	1.0	0	143	3.3
12	2.9	0	1.2	56	0.4	1.6	0	100	3.3	0.8	144	0
13	1.1	0	1.2	57	0.6	1.5	0.3	101		3.3	145	1.7
14	3.3	0	1.2	58	0	1.5	1.6	102		0	146	1.7
15	3.3	0	1.5	59	0.4	1.4	0.8	103		0	147	2.0
16	3.3	0	1.0	60	2.5	0	0	104		0	148	0.5
17	3.3	0	1.0	61	3.3	0.2	0.5	105		0	149	0
18	0.3	0	1.4	62	0	1.3	0	106		0	150	0
19	3.3	0	1.4	63	3.3	1.4	0	107		0	151	0
20	3.3	0	0.2	64	0	1.1	3.3	108		0.2	152	0
21	3.3	1.6	3.2	65	1.2	1.2	0	109		3.3	153	1.5
22	3.3	0	3.3	66	1.3	1.7	0	110		0	154	0
23	3.3	0.3	0.3	67	1.3	1.0	0.5	111		1.6	155	0.5
24	1.2	1.6	1.2	68	1.7	1.1	0	112		1.6	156	1.6
25	3.3	0.3	1.7	69	1.3	1.2	0	113		1.7	157	1.6
26	0	0.8	1.6	70	1.3	0	3.3	114		1.5	158	1.6
27	1.4	0	1.6	71	1.7	3.3	0	115		1.5	159	1.3
28	3.3	0.4	1.6	72	3.3	0.6	0	116		1.5	160	1.4
29	3.3	3.3	1.6	73	3.3	0.2	1.5	117		3.3	161	1.6
30	1.0	0	1.5	74	3.3	0.9	3.3	118		0	162	1.6
31	1.0	0	1.5	75	3.3	0.4	0	119		0	163	1.6
32	0.6	0	1.5	76	3.3	3.3	3.3	120		0	164	3.3
33	1.5	1.2	3.3	77	3.3	3.3	0	121		0	165	0
34	1.5	1.6	0	78	0	0.6	1.5	122		0	166	1.5
35	3.3	1.6	3.3	79	3.3	0.4	1.9	123		0	167	1.5
36	0	1.7	0	80	0	1.6	0.8	124		0	168	1.6
37	3.3	1.6	0	81	3.3		0.8	125		0	169	1.4
38	0	1.6	0	82	0		1.9	126		0	170	1.4
39	0	1.5	3.3	83	0		1.9	127		0	171	1.5
40	0	1.5	1.7	84	3.3		0.7	128		0	172	1.8
41	0	0	1.6	85	3.3		1.8	129		0	173	1.2
42	0	0	3.3	86	3.3		1.9	130		0	174	0
43	0.2	0.3	0	87	3.3		1.9	131		0	175	0
44	3.3	0.3	0	88	0		0.8	132		0	176	0.2

	IC2	IC26	IC11	IC12	IC17	IC19	IC20	IC21	IC22	IC23	IC24	IC3	IC25
Pin 1	3.3	6.2	0	0	3.3	0	0.4	0.5	3.3	1.1	0.3	3.3	1.6
2	3.3	4.7	0.2	0	2.9	0	0.5	2.8	0.6	0.3	2.9	3.3	1.6
3	0	0	0	0	0	0	0	0	0	0	0	3.3	1.6
4			3.0	3.2	3.3	0	2.8	0.4	0.4	2.9	3.3	3.3	0
5			3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	1.7
6												0.3	3.3
7												0	3.3
8												0	3.3

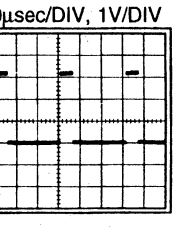
	IC9
Pin 1	3.3
2	3.3
3	3.3
4	3.3
5	3.3
6	0
7	0
8	1.5
9	0
10	0
11	0
12	0
13	0
14	0
15	0
16	0
17	0
18	0
19	3.2
20	3.1

	IC13	IC15		IC13	IC15		IC13
Pin 1	0	0	Pin 17	0	0.6	Pin 33	2.0
2	0	3.3	18	2.1	3.3	34	2.0
3	0	0	19	5.0	0	35	5.0
4	0.8	3.3	20	2.1	3.3	36	0
5	2.5	1.6	21	2.1	0	37	3.1
6	2.0	0	22	0	1.4	38	1.7
7	2.0	3.3	23	3.3	1.3	39	2.5
8	2.0	0.7	24	0	0.5	40	0
9	2.0	0	25	2.5	1.3	41	0.8
10	0	0.9	26	2.5	1.6	42	0
11	2.0	1.9	27	2.9	1.2	43	0
12	0	0.5	28	2.9	1.4	44	0
13	2.0	0.5	29	5.0	2.0	45	1.1
14	2.0	1.3	30	2.4	0.6	46	1.1
15	2.0	2.8	31	3.2	0.6	47	1.8
13	2.4	0	32	3.0	0.7	48	5.0

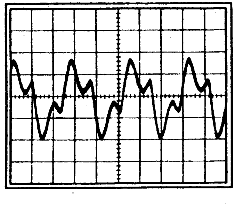
	S	G	D
Q 1	0.7	0	3.3
2	0.7	0	3.3
3	0.7	0	3.3
4	1.8	1.4	3.3

	B	C	E
Q 13	−0.4	8.3	0
14	9.0	8.3	9.5
15	4.0	5.1	3.3
17	0.4	9.0	0.9
18	0.4	0	0.9

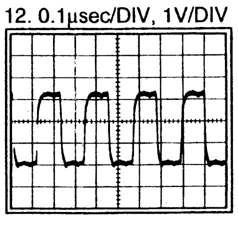
μsec/DIV, 1V/DIV



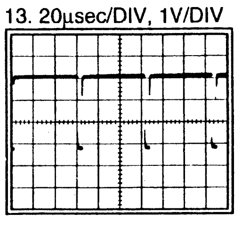
11. 20nsec/DIV, 2V/DIV



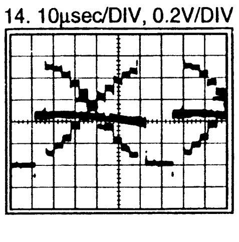
12. 0.1μsec/DIV, 1V/DIV



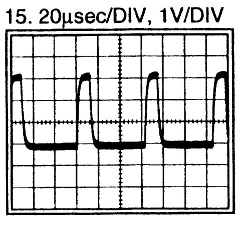
13. 20μsec/DIV, 1V/DIV



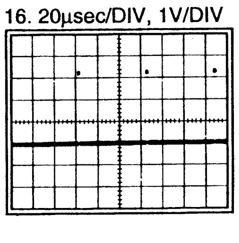
14. 10μsec/DIV, 0.2V/DIV



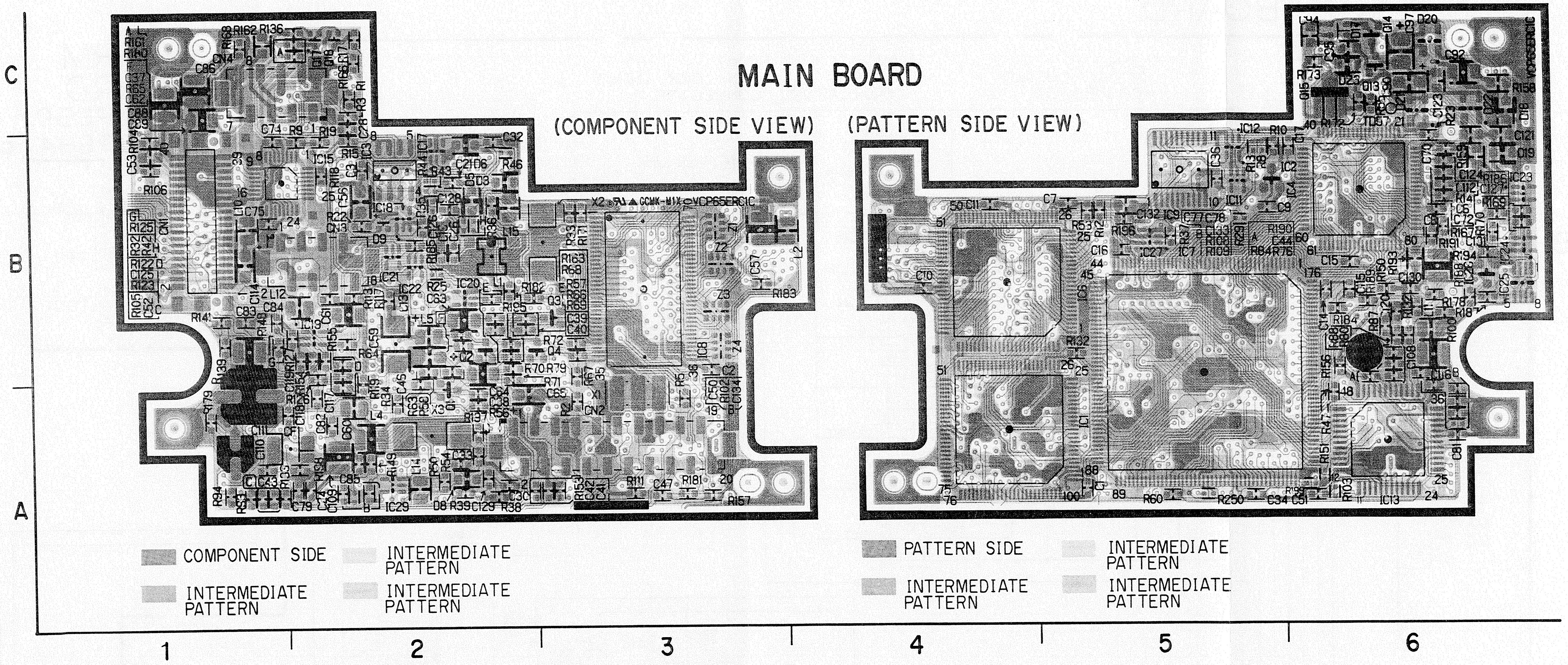
15. 20μsec/DIV, 1V/DIV



16. 20μsec/DIV, 1V/DIV



CONDUCTOR VIEW OF MAIN BOARD

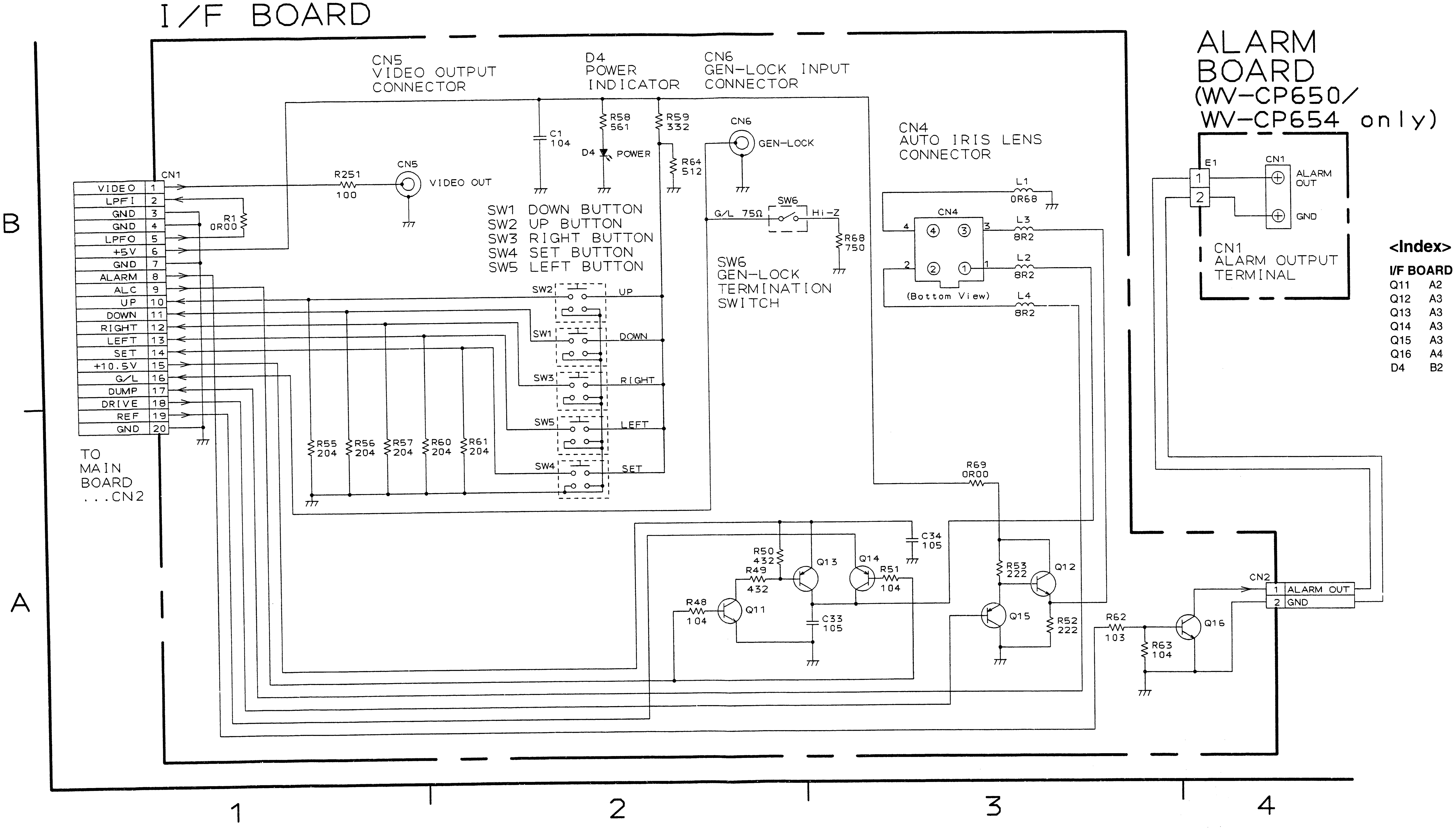

MAIN BOARD
(COMPONENT SIDE VIEW)
(PATTERN SIDE VIEW)
COMPONENT SIDE
INTERMEDIATE PATTERN
INTERMEDIATE PATTERN
INTERMEDIATE PATTERN
PATTERN SIDE
INTERMEDIATE PATTERN
INTERMEDIATE PATTERN
INTERMEDIATE PATTERN
C
B
A
1
2
3
4
5
6

<Index>

MAIN BOARD

IC1	A5
IC2	B6
IC3	B2
IC4	B6
IC6	B5
IC7	B5
IC8	B3
IC9	B5
IC11	B5
IC12	B5
IC13	A6
IC15	B2
IC17	B2
IC18	B2
IC19	B2
IC20	B2
IC21	B2
IC22	B2
IC23	B6
IC24	B6
IC25	B6
IC26	B6
IC27	B5
IC29	A2
Q1	A2
Q2	B2
Q3	B3
Q4	B3
Q13	C6
Q14	C6
Q15	C6
Q17	C2
Q18	C2
D3	B2
D5	B2
D6	B2
D8	A2
D9	B2
D17	C6
D18	C6
D19	B6
D20	C6
D21	C6
D22	C6
D23	C6

SCHEMATIC DIAGRAM OF I/F BOARD/ALARM BOARD (WV-CP650/WV-CP654)


I/F BOARD
CN5 VIDEO OUTPUT CONNECTOR
D4 POWER INDICATOR
CN6 GEN-LOCK INPUT CONNECTOR
CN4 AUTO IRIS LENS CONNECTOR
ALARM BOARD (WV-CP650/ WV-CP654 only)
CN1 ALARM OUTPUT TERMINAL
E1
CN1
ALARM OUT
GND
CN1
VIDEO 1
LPFI 2
GND 3
GND 4
LPFO 5
+5V 6
GND 7
ALARM 8
ALC 9
UP 10
DOWN 11
RIGHT 12
LEFT 13
SET 14
+10.5V 15
G/L 16
DUMP 17
DRIVE 18
REF 19
GND 20
TO MAIN BOARD ...CN2
R1 0R00
R251 100
CN5
VIDEO OUT
C1 104
R58 561
D4 POWER
R59 332
R64 512
CN6
GEN-LOCK
G/L 75Ω
SW6
Hi-Z
R68 750
SW6 GEN-LOCK TERMINATION SWITCH
SW1 DOWN BUTTON
SW2 UP BUTTON
SW3 RIGHT BUTTON
SW4 SET BUTTON
SW5 LEFT BUTTON
SW2 UP
SW1 DOWN
SW3 RIGHT
SW5 LEFT
SW4 SET
R55 204
R56 204
R57 204
R60 204
R61 204
CN4
L1 0R68
L3 8R2
L2 8R2
L4 8R2
(Bottom View)
R69 0R00
C34 105
R50 432
R49 432
Q13
Q14
R51 104
R48 104
Q11
C33 105
R53 222
Q12
Q15
R52 222
R62 103
R63 104
Q16
CN2
1 ALARM OUT
2 GND
B
A
1
2
3
4

<Index>

I/F BOARD

Q11	A2
Q12	A3
Q13	A3
Q14	A3
Q15	A3
Q16	A4
D4	B2

Note: The value indicated in the schematic diagram should be read as follows:

□ □ □
- Multiplier (0 - 5)
- 2nd. Significant Digit (0 - 9)
- 1st. Siginificant Digit (1 - 9)

<Example>

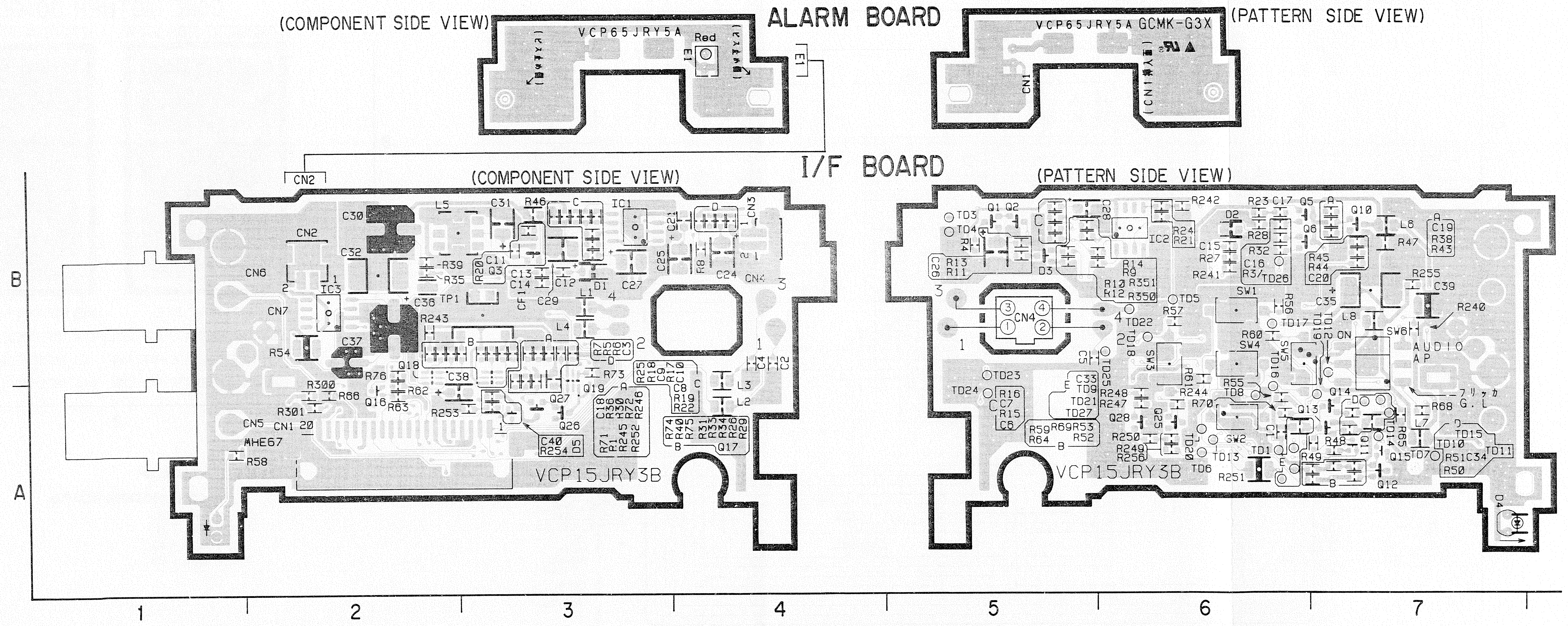
For Resistor:

330 → 33×10^0 = 33 Ω
561 → 56×10^1 = 560 Ω
123 → 12×10^3 = 12k Ω
0R00 = 0 Ω

For Capacitor:

820 → 82×10^0 = 82 pF
102 → 10×10^2 = 1000 pF = 0.001 μF
104 → 10×10^4 = 100000 pF = 0.1 μF
The suffix attached to capacitance indicates a type of capacitor.

CONDUCTOR VIEW OF I/F BOARD/ALARM BOARD (WV-CP650/WV-CP654)


(COMPONENT SIDE VIEW)
VCP65JRY5A
Red
E1
ALARM BOARD
VCP65JRY5A GCMK-G3X
(PATTERN SIDE VIEW)
CN1
CN2
I/F BOARD
(COMPONENT SIDE VIEW)
(PATTERN SIDE VIEW)
VCP15JRY3B
VCP15JRY3B
CN4
SW1
SW2
SW3
SW4
SW5
SW6
ON
AUDIO
AP
G.L
B
A
1
2
3
4
5
6
7

<Voltage>

I/F BOARD

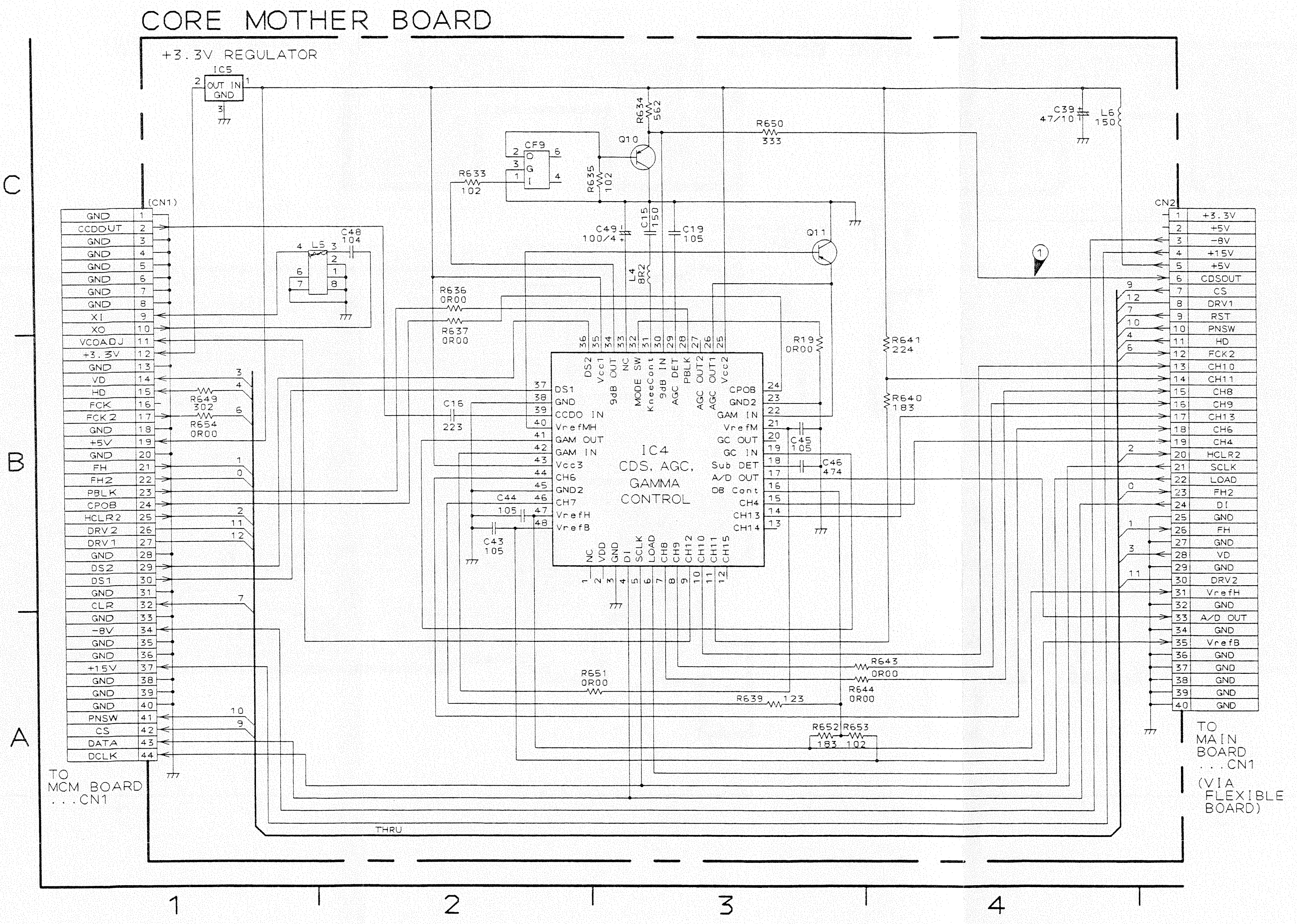
	B	C	E
Q 11	0	10.3	0
12	4.7	5.1	4.0
13	10.3	2.0	10.3
14	1.5	2.0	2.0
15	2.2	0	2.6
16	0	0.9	0

<Index>

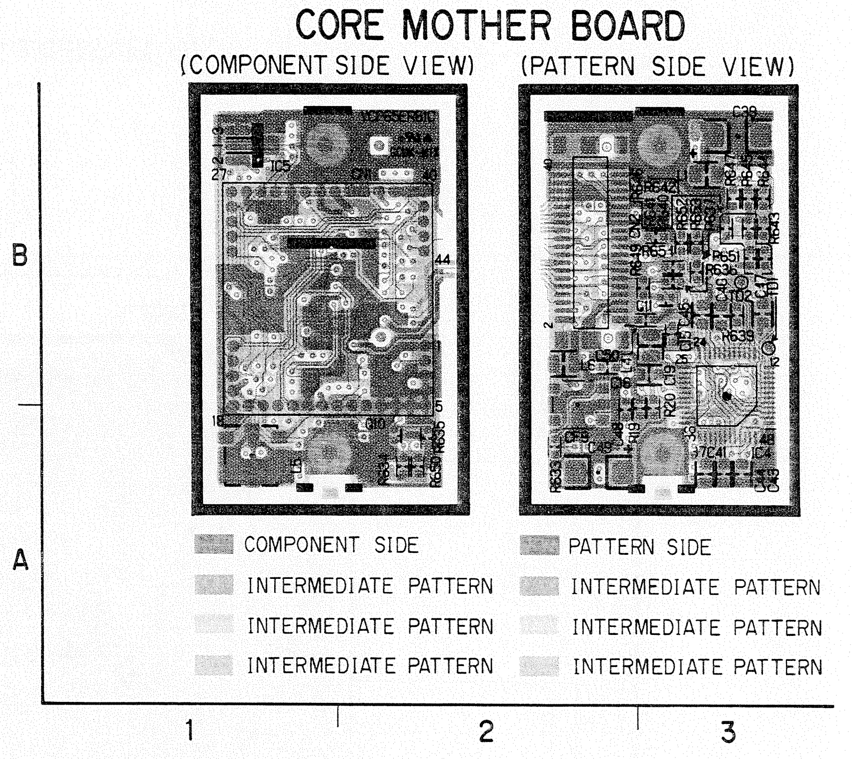
I/F BOARD

Q11	A7
Q12	A7
Q13	A7
Q14	A7
Q15	A7
Q16	A2
D4	A7

SCHEMATIC DIAGRAM OF CORE MOTHER BOARD


CORE MOTHER BOARD
+3.3V REGULATOR
IC5
OUT IN GND
CF9
Q10
Q11
R650 333
R633 102
R634 562
R635 102
C49 100/4
C15 150
C19 105
L4 8R2
C39 47/10
L6 150
L5
C48 104
R636 0R00
R637 0R00
R19 0R00
R641 224
R640 183
C16 223
R649 302
R654 0R00
IC4
CDS, AGC, GAMMA CONTROL
C45 105
C46 474
C44 105
C43 105
R651 0R00
R643 0R00
R644 0R00
R639 123
R652 183
R653 102
THRU
CN1
GND, CCDOUT, GND, GND, GND, GND, GND, GND, XI, XO, VCOADJ, +3.3V, GND, VD, HD, FCK, FCK2, GND, +5V, GND, FH, FH2, PBLK, CPOB, HCLR2, DRV2, DRV1, GND, DS2, DS1, GND, CLR, GND, -8V, GND, GND, +15V, GND, GND, GND, PNSW, CS, DATA, DCLK
TO MCM BOARD ...CN1
CN2
+3.3V, +5V, -8V, +15V, +5V, CDSOUT, CS, DRV1, RST, PNSW, HD, FCK2, CH10, CH11, CH8, CH9, CH13, CH6, CH4, HCLR2, SCLK, LOAD, FH2, DI, GND, FH, GND, VD, GND, DRV2, VrefH, GND, A/D OUT, GND, VrefB, GND, GND, GND, GND, GND
TO MAIN BOARD ...CN1 (VIA FLEXIBLE BOARD)
C
B
A
1
2
3
4

CONDUCTOR VIEW OF CORE MOTHER BOARD


CORE MOTHER BOARD
(COMPONENT SIDE VIEW)
(PATTERN SIDE VIEW)
B
A
1
2
3
COMPONENT SIDE
INTERMEDIATE PATTERN
INTERMEDIATE PATTERN
INTERMEDIATE PATTERN
PATTERN SIDE
INTERMEDIATE PATTERN
INTERMEDIATE PATTERN
INTERMEDIATE PATTERN

<Index>

CORE MOTHER BOARD

IC4	A3
IC5	B1
Q10	A2
Q11	B3

<Index>

CORE MOTHER BOARD

IC4	B3
IC5	C1
Q10	C3
Q11	C3

Note: The value indicated in the schematic diagram should be read as follows:

□ □ □

Multiplier (0 - 5)

2nd. Significant Digit (0 - 9)

1st. Significant Digit (1 - 9)

<Example>

For Resistor:

330 → 33 x 10^0 = 33 Ω

561 → 56 x 10^1 = 560 Ω

123 → 12 x 10^3 = 12k Ω

0R00 = 0 Ω

For Capacitor:

820 → 82 x 10^0 = 82 pF

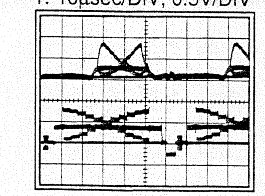
102 → 10 x 10^2 = 1000 pF = 0.001 µF

104 → 10 x 10^4 = 100000 pF = 0.1 µF

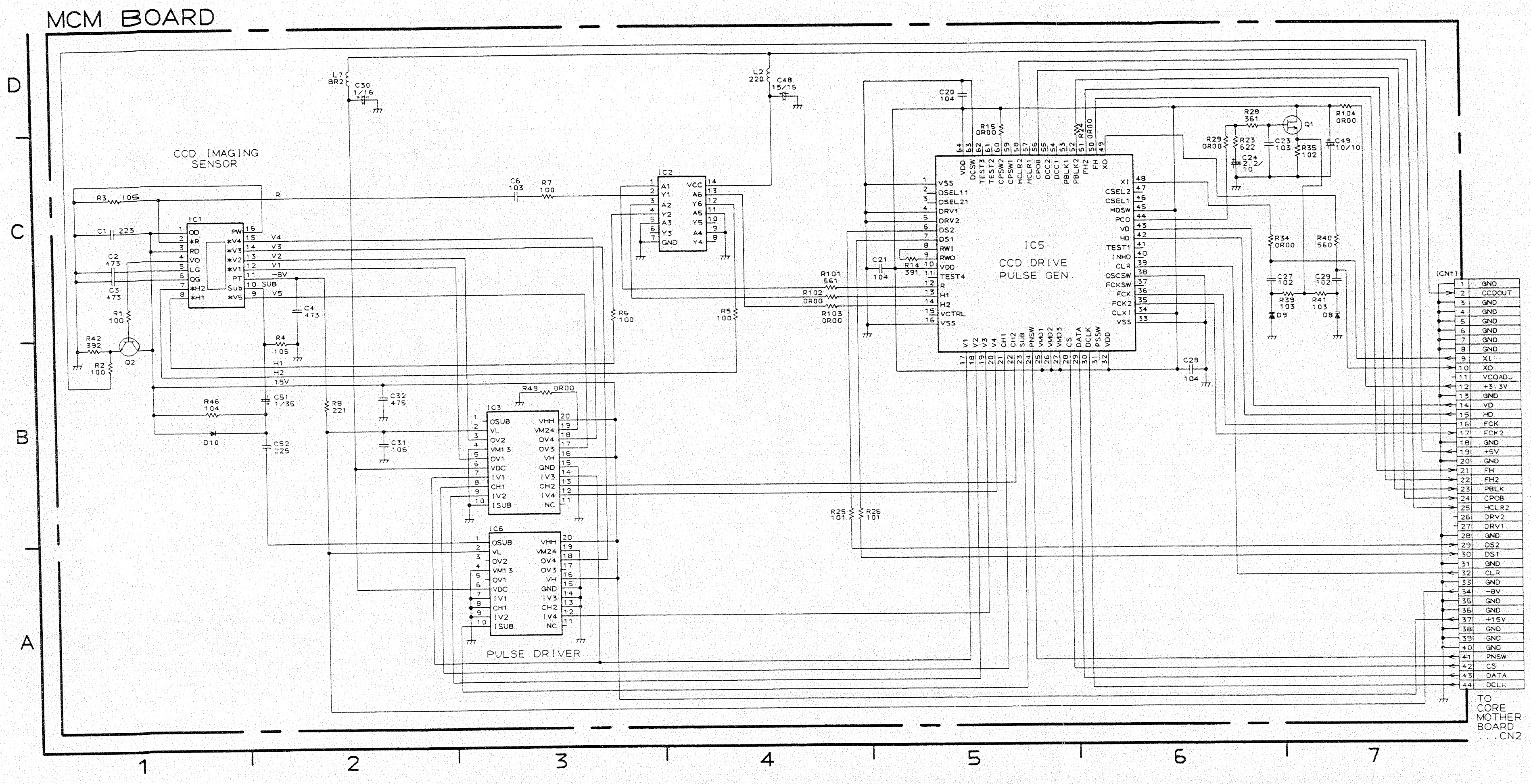
The suffix attached to capacitance indicates a type of capacitor.

<Waveform> **CORE MOTHER BOARD**

1. 10µsec/DIV, 0.5V/DIV



SCHEMATIC DIAGRAM OF MCM BOARD


MCM BOARD
CCD IMAGING SENSOR
IC1
IC2
IC3
IC5
CCD DRIVE PULSE GEN.
IC6
PULSE DRIVER
Q1
Q2
D8
D9
D10
(CN1)
1 GND
2 CCDOUT
3 GND
4 GND
5 GND
6 GND
7 GND
8 GND
9 XI
10 XO
11 VCOADJ
12 +3.3V
13 GND
14 VD
15 HD
16 FCK
17 FCK2
18 GND
19 +5V
20 GND
21 FH
22 FH2
23 PBLK
24 CPOB
25 HCLR2
26 DRV2
27 DRV1
28 GND
29 DS2
30 DS1
31 GND
32 CLR
33 GND
34 −8V
35 GND
36 GND
37 +15V
38 GND
39 GND
40 GND
41 PNSW
42 CS
43 DATA
44 DCLK
TO CORE MOTHER BOARD ...CN2
D
C
B
A
1
2
3
4
5
6
7

<Index>

MCM BOARD

IC1	C1
IC2	C4
IC3	B3
IC5	C5
IC6	B3
Q1	C7
Q2	B1
D8	C7
D9	C6
D10	B1

Note: The value indicated in the schematic diagram should be read as follows:

☐ ☐ ☐
Multiplier (0 - 5)
2nd. Significant Digit (0 - 9)
1st. Siginificant Digit (1 - 9)

<Example>

For Resistor:

330 → 33×10^0 = 33 Ω
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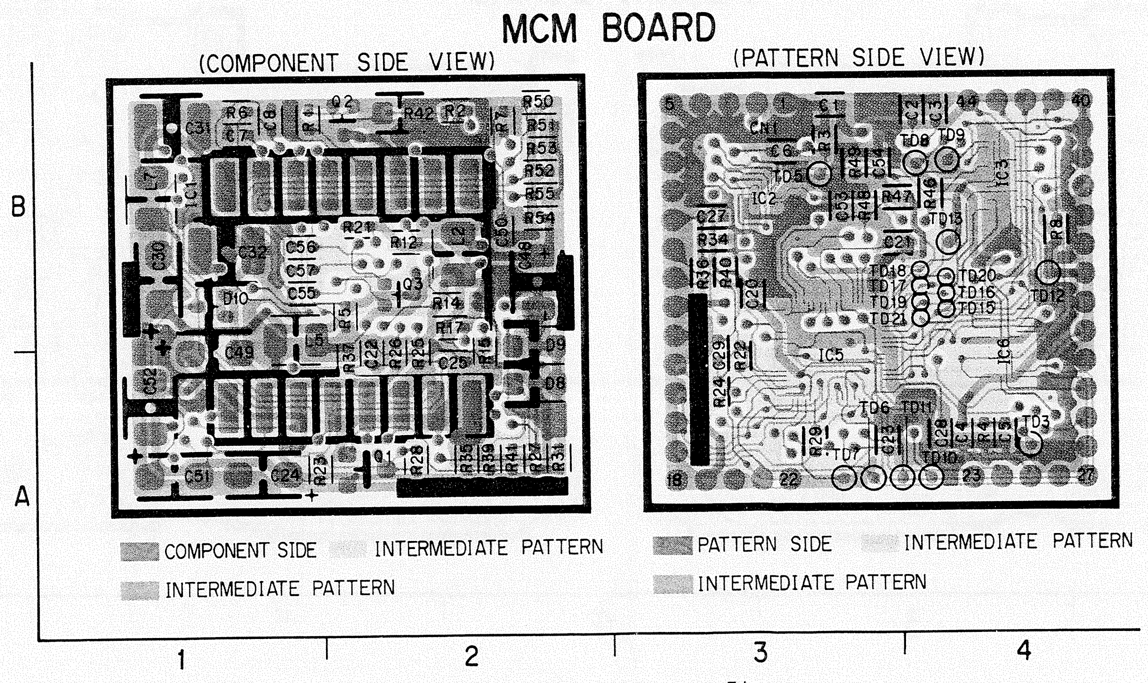
0R00 = 0 Ω

For Capacitor:

820 → 82×10^0 = 82 pF
102 → 10×10^2 = 1000 pF = 0.001 μF
104 → 10×10^4 = 100000 pF = 0.1 μF
The suffix attached to capacitance indicates a type of capacitor.

CONDUCTOR VIEW OF MCM BOARD

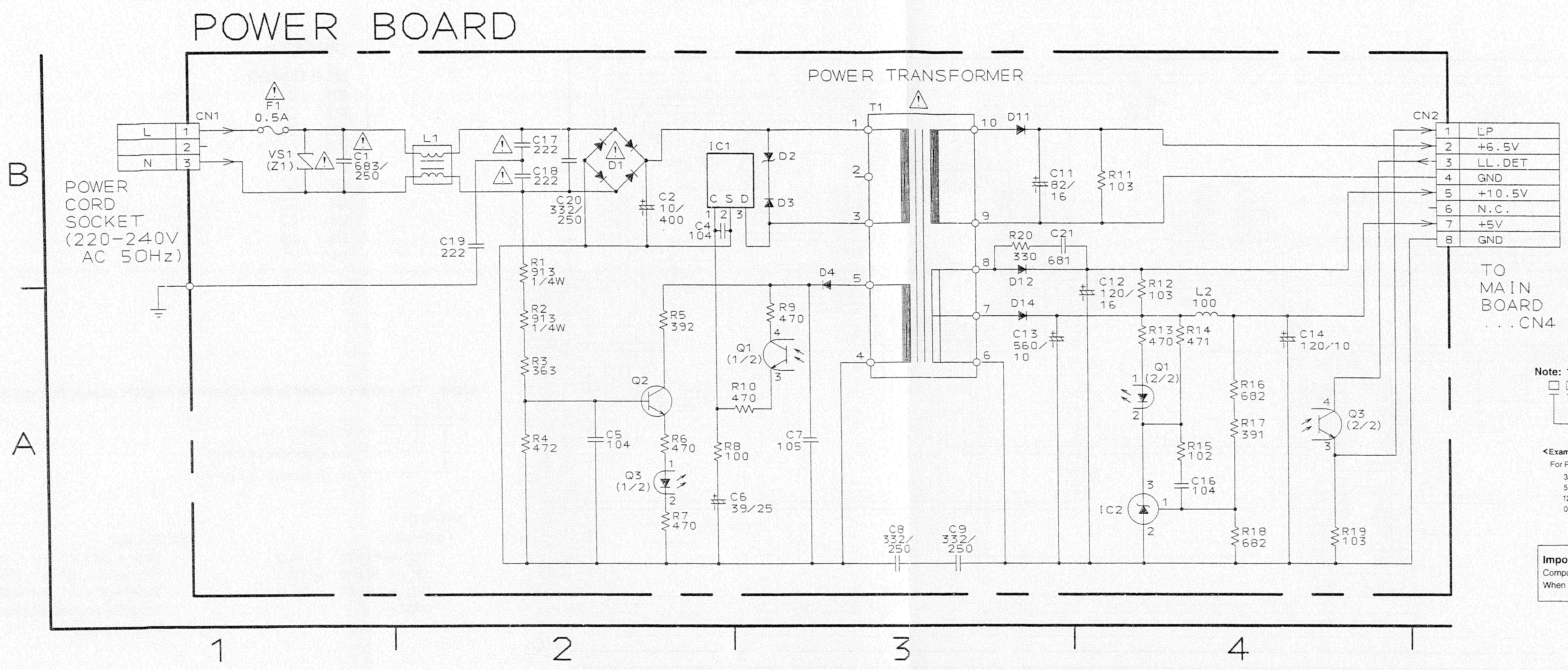

MCM BOARD
(COMPONENT SIDE VIEW)
(PATTERN SIDE VIEW)
COMPONENT SIDE
INTERMEDIATE PATTERN
INTERMEDIATE PATTERN
PATTERN SIDE
INTERMEDIATE PATTERN
INTERMEDIATE PATTERN
B
A
1
2
3
4

<Index>

MCM BOARD

IC1	B1
IC2	B3
IC3	B4
IC5	A3
IC6	A4
Q1	A2
Q2	B2
D8	A2
D9	A2
D10	B1

SCHEMATIC DIAGRAM OF POWER BOARD (WV-CP450/WV-CP650)


POWER BOARD
POWER CORD SOCKET (220-240V AC 50Hz)
CN1
L 1
2
N 3
F1 0.5A
VS1 (Z1)
C1 683/250
L1
C17 222
C18 222
C19 222
C20 332/250
D1
C2 10/400
IC1
C S D
1 2 3
C4 104
D2
D3
D4
R1 913 1/4W
R2 913 1/4W
R3 363
R4 472
C5 104
Q2
R5 392
R6 470
Q3 (1/2)
R7 470
R8 100
C6 39/25
R9 470
Q1 (1/2)
R10 470
C7 105
POWER TRANSFORMER
T1
C8 332/250
C9 332/250
D11
C11 82/16
R11 103
R20 330
C21 681
D12
C12 120/16
R12 103
D14
L2 100
C13 560/10
R13 470
R14 471
Q1 (2/2)
R15 102
C16 104
IC2
R16 682
R17 391
R18 682
C14 120/10
Q3 (2/2)
R19 103
CN2
1 LP
2 +6.5V
3 LL.DET
4 GND
5 +10.5V
6 N.C.
7 +5V
8 GND
TO MAIN BOARD ...CN4
B
A
1
2
3
4

<Index>

POWER BOARD

IC1	B3
IC2	A4
Q1	A3, A4
Q2	A2
Q3	A2, A4
D1	B2
D2	B3
D3	B3
D4	B3
D11	B3
D12	B3
D14	A3

Note: The value indicated in the schematic diagram should be read as follows:

□ □ □
Multiplier (0 - 5)
2nd. Significant Digit (0 - 9)
1st. Siginificant Digit (1 - 9)

<Example>

For Resistor:

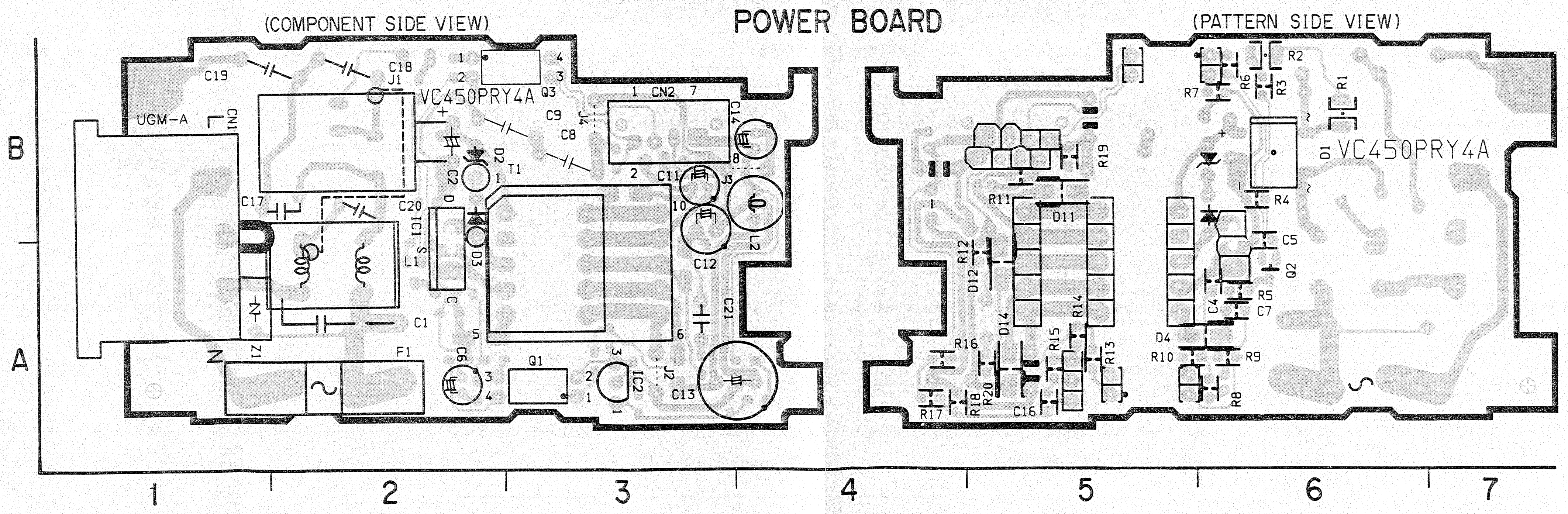
330 → 33×10^0 = 33 Ω
561 → 56×10^1 = 560 Ω
123 → 12×10^3 = 12k Ω
0R00 = 0 Ω

For Capacitor:

820 → 82×10^0 = 82 pF
102 → 10×10^2 = 1000 pF = 0.001 μF
104 → 10×10^4 = 100000 pF = 0.1 μF
The suffix attached to capacitance indicates a type of capacitor.

Important safety notice
Components Identified by " ⚠ " mark have special characteristics for safety.
When replacing any of these components, use only manufacturer's specified parts.

CONDUCTOR VIEW OF POWER BOARD (WV-CP450/WV-CP650)

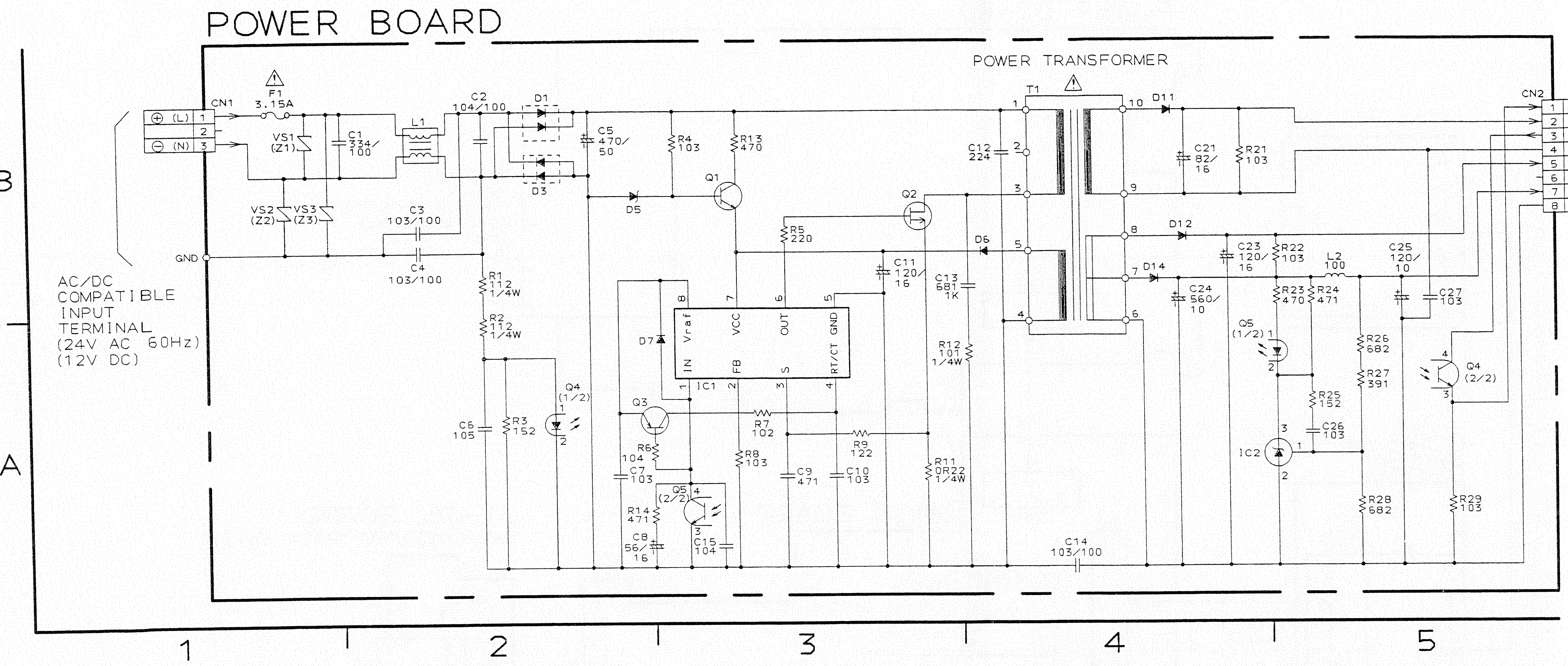

POWER BOARD
(COMPONENT SIDE VIEW)
(PATTERN SIDE VIEW)
C19
C18
J1
UGM-A
CN1
VC450PRY4A
Q3
C9
C8
J4
CN2
C14
T1
D2
C2
C11
J3
C17
C20
IC1
D3
L1
L2
C12
C21
C1
F1
Z1
N
C6
Q1
IC2
J2
C13
R2
R7
R6
R3
R1
D1
R19
R11
D11
R4
C5
R12
D12
D14
R14
Q2
R5
C4
C7
R16
R15
R13
D4
R10
R9
R17
R18
R20
C16
R8
B
A
1
2
3
4
5
6
7

<Index>

POWER BOARD

IC1	B2
IC2	A3
Q1	A3
Q2	A6
Q3	B3
D1	B6
D2	B2
D3	B3
D4	A5
D11	B5
D12	A5
D14	A5

SCHEMATIC DIAGRAM OF POWER BOARD (WV-CP454/WV-CP654)


POWER BOARD
POWER TRANSFORMER
T1
CN1
F1
3.15A
VS1 (Z1)
VS2 (Z2)
VS3 (Z3)
C1 334/100
L1
C2 104/100
C3 103/100
C4 103/100
D1
D3
C5 470/50
R4 103
R13 470
Q1
D5
R5 220
Q2
C12 224
D6
C11 120/16
C13 681 1K
R12 101 1/4W
R1 112 1/4W
R2 112 1/4W
C6 105
R3 152
Q4 (1/2)
D7
IC1
Vraf
VCC
OUT
RT/CT GND
IN
FB
S
Q3
R6 104
C7 103
R7 102
R8 103
R9 122
C9 471
C10 103
R11 0R22 1/4W
Q5 (2/2)
R14 471
C8 56/16
C15 104
C14 103/100
D11
C21 82/16
R21 103
D12
D14
C23 120/16
R22 103
C24 560/10
R23 470
R24 471
L2 100
C25 120/10
C27 103
Q5 (1/2)
R25 152
C26 103
IC2
R26 682
R27 391
Q4 (2/2)
R28 682
R29 103
CN2
1 LP
2 +6.2V
3 LL.DET
4 GND
5 +10.5V
6 N.C.
7 +5V
8 GND
TO MAIN BOARD ...CN4
AC/DC COMPATIBLE INPUT TERMINAL (24V AC 60Hz) (12V DC)
GND
(L)
(N)
B
A
1
2
3
4
5

<Index>

POWER BOARD

IC1	A3
IC2	A4
Q1	B3
Q2	B3
Q3	A2
Q4	A2, A5
Q5	A3, A4
D1	B2
D3	B2
D5	B2
D6	A4
D7	A3
D11	A4
IC12	A4
IC14	A4

Note: The value indicated in the schematic diagram should be read as follows:

□ □ □
Multiplier (0 - 5)
2nd. Significant Digit (0 - 9)
1st. Siginificant Digit (1 - 9)

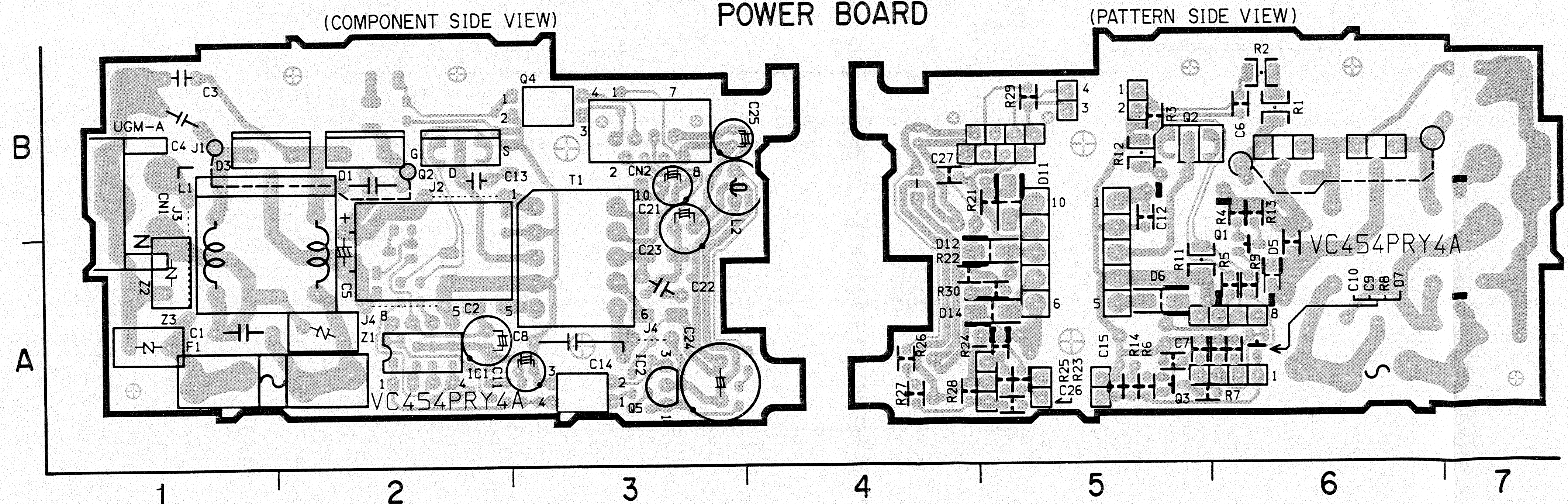
<Example>

For Resistor:
330 → 33×10^0 = 33 Ω
561 → 56×10^1 = 560 Ω
123 → 12×10^3 = 12k Ω
0R00 = 0 Ω

For Capacitor:
820 → 82×10^0 = 82 pF
102 → 10×10^2 = 1000 pF = 0.001 µF
104 → 10×10^4 = 100000 pF = 0.1 µF
The suffix attached to capacitance indicates a type of capacitor.

Important safety notice
Components Identified by " ⚠ " mark have special characteristics for safety.
When replacing any of these components, use only manufacturer's specified parts.

CONDUCTOR VIEW OF POWER BOARD (WV-CP454/WV-CP654)

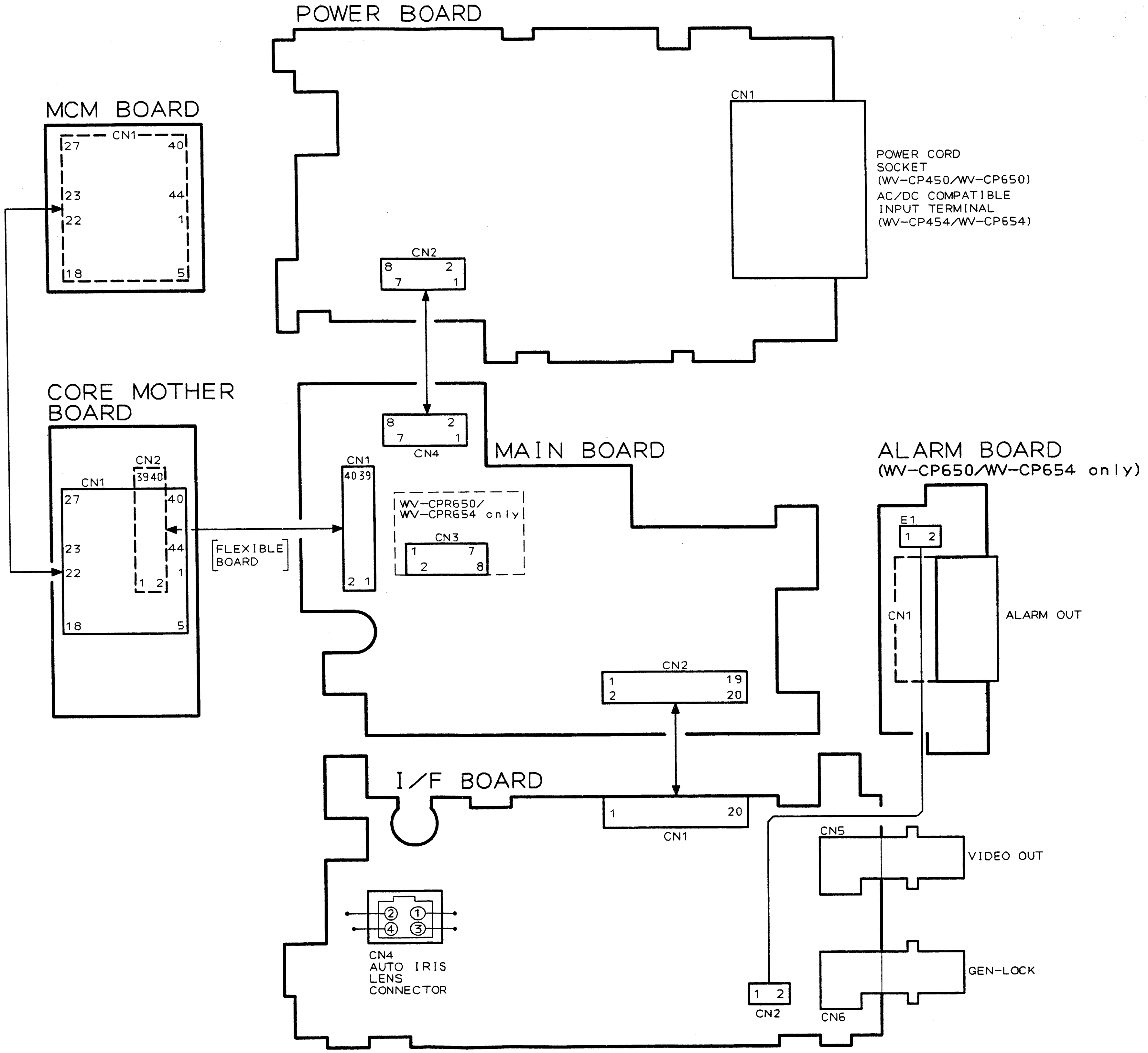

(COMPONENT SIDE VIEW)
POWER BOARD
(PATTERN SIDE VIEW)
UGM-A
C3
C4
J1
D3
CN1
J3
L1
Z2
Z3
C1
F1
D1
Q2
D
G
S
J2
C13
Q4
T1
CN2
C25
C21
C23
C22
L2
C5
C2
J4
Z1
IC1
C11
C8
C14
C24
J5
IC2
Q5
VC454PRY4A
R2
R1
R29
Q2
R3
C6
R12
C12
C27
R21
D11
Q1
R4
R13
D5
VC454PRY4A
R11
R5
R9
D12
R22
R30
D14
D6
C10
C9
R8
D7
R26
R24
R27
R28
R25
R23
C26
C15
R14
R6
C7
Q3
R7
B
A
1
2
3
4
5
6
7

<Index>

POWER BOARD

IC1	A2
IC2	A3
Q1	A6
Q2	B2
Q3	A5
Q4	B3
Q5	A3
D1	B2
D3	B1
D5	A6
D6	A5
D7	A6
D11	B5
IC12	A4
IC14	A4

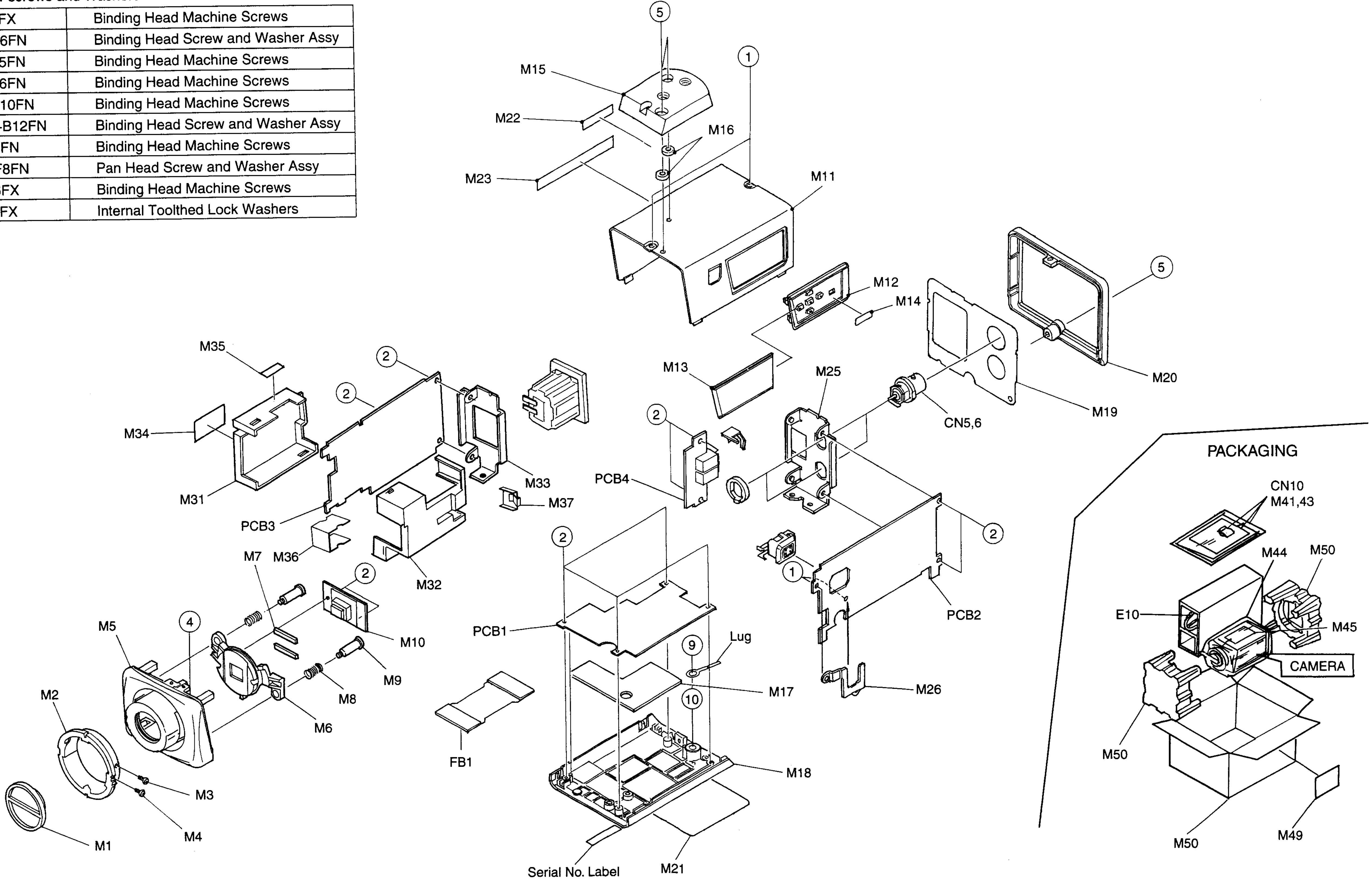
WIRING DIAGRAM


POWER BOARD
CN1
POWER CORD SOCKET (WV-CP450/WV-CP650)
AC/DC COMPATIBLE INPUT TERMINAL (WV-CP454/WV-CP654)
CN2
8 2
7 1
MCM BOARD
CN1
27 40
23 44
22 1
18 5
CORE MOTHER BOARD
CN2
39 40
CN1
27 40
23 44
22 1
1 2
18 5
FLEXIBLE BOARD
CN1
40 39
2 1
8 2
7 1
CN4
MAIN BOARD
WV-CPR650/ WV-CPR654 only
CN3
1 7
2 8
CN2
1 19
2 20
ALARM BOARD
(WV-CP650/WV-CP654 only)
E1
1 2
CN1
ALARM OUT
I/F BOARD
1 20
CN1
CN5
VIDEO OUT
② ①
④ ③
CN4
AUTO IRIS LENS CONNECTOR
1 2
CN2
GEN-LOCK
CN6

EXPLODED VIEW FOR WV-CP450 / WV-CP650

○Number's show screws and Washers.

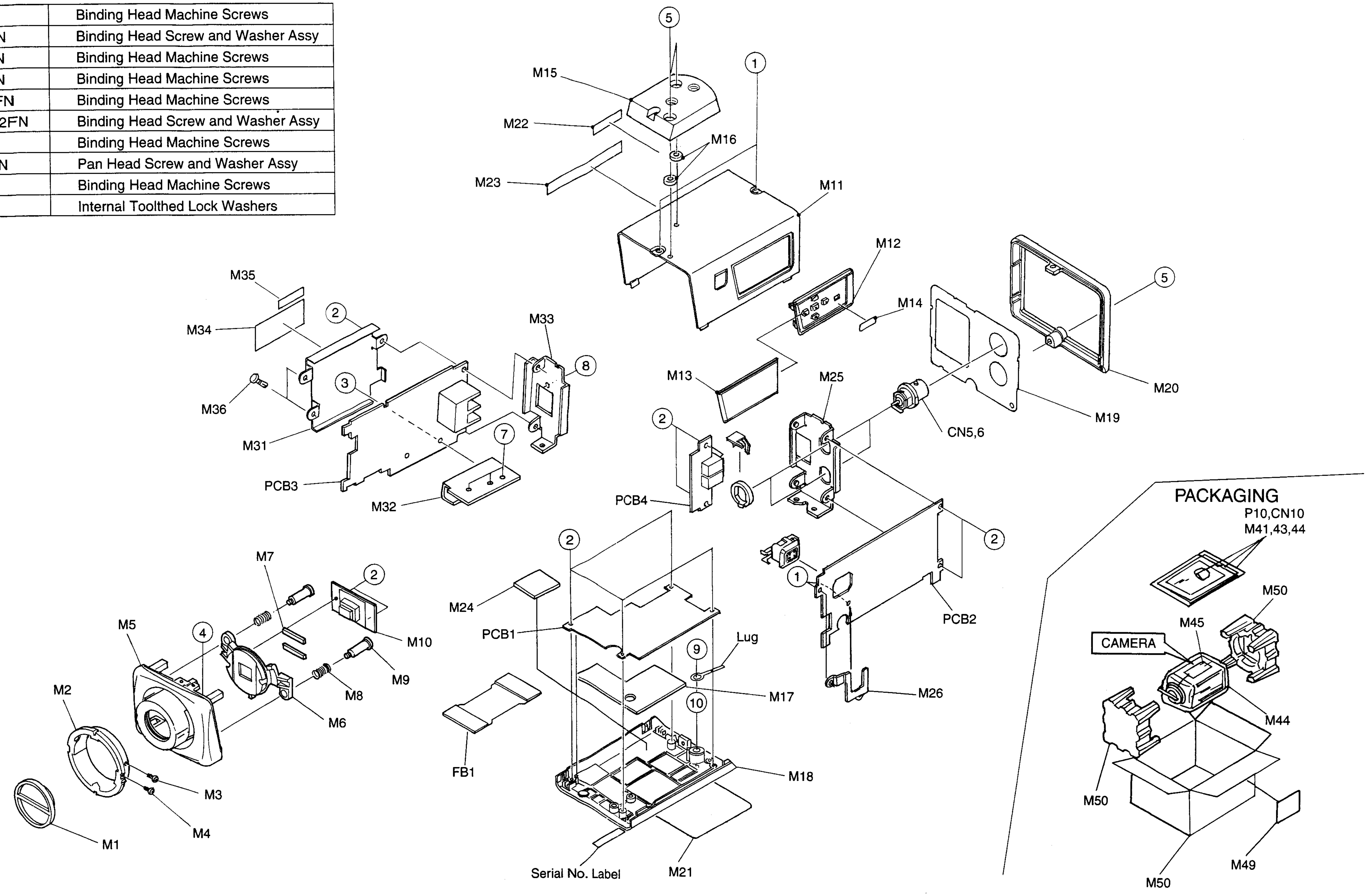
①	XSB2+5FX	Binding Head Machine Screws
②	XYM2+J6FN	Binding Head Screw and Washer Assy
③	XSB25+5FN	Binding Head Machine Screws
④	XSB25+6FN	Binding Head Machine Screws
⑤	XSB25+10FN	Binding Head Machine Screws
⑥	XYM25+B12FN	Binding Head Screw and Washer Assy
⑦	XSB3+8FN	Binding Head Machine Screws
⑧	XYN3+F8FN	Pan Head Screw and Washer Assy
⑨	XSB4+6FX	Binding Head Machine Screws
⑩	XWC4BFX	Internal Toolthed Lock Washers


⑤
①
M15
M22
M16
M23
M11
M12
M14
⑤
M20
M19
M35
②
②
M34
M31
PCB3
M36
M7
M33
M37
M32
M13
M25
CN5,6
②
PCB4
②
②
①
PCB2
PCB1
⑨
Lug
⑩
M17
M26
M18
M21
Serial No. Label
FB1
②
M10
M9
M8
M6
④
M5
M2
M3
M4
M1
PACKAGING
CN10
M41,43
M44
M50
E10
M45
CAMERA
M50
M50
M49

EXPLODED VIEW FOR WV-CP454 / WV-CP654

○Number's show screws and Washers.

①	XSB2+5FX	Binding Head Machine Screws
②	XYM2+J6FN	Binding Head Screw and Washer Assy
③	XSB25+5FN	Binding Head Machine Screws
④	XSB25+6FN	Binding Head Machine Screws
⑤	XSB25+10FN	Binding Head Machine Screws
⑥	XYM25+B12FN	Binding Head Screw and Washer Assy
⑦	XSB3+8FN	Binding Head Machine Screws
⑧	XYN3+F8FN	Pan Head Screw and Washer Assy
⑨	XSB4+6FX	Binding Head Machine Screws
⑩	XWC4BFX	Internal Toolthed Lock Washers


⑤
①
M15
M22
M16
M23
M11
M12
M35
M14
⑤
M34
②
M33
M20
⑧
M13
M25
M36
③
M19
CN5,6
M31
⑦
②
PCB3
M32
PCB4
②
②
PACKAGING
P10,CN10
M41,43,44
M7
②
①
M50
M24
PCB2
M45
M5
④
M10
PCB1
Lug
CAMERA
⑨
M2
M9
M17
M26
M8
⑩
M44
M6
FB1
M18
M3
M50
M4
M1
Serial No. Label
M21
M49
M50

REPLACEMENT PARTS LIST

Important Notice

1. Components identified by " ⚠ " mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
2. RTL : Retention Time Limited,

MISCELLANEOUS

REF.NO.	PART NO.	DESCRIPTION
FB1	YWVCP15JKZ1A	Flexible Board
M1	YWBC-2B	Body Cap
M2	YWV3FA0178A3	Ring
M3	YWV1EA0128A4	Special Screw
M4	YWV1EB0127A4	FB Lock Screw
M5	YWV5BA1017A2	Front Escutcheon
M6	YWV6FA1021A3	Bracket
M7	YWV2FA1133A4	Cushion
M8	YWV4JA1082A4	Spring
M9	YWV2JA1026A4	Brace
M10	YWV0EA1166AN	Head Optical Assy for WV-CP450/BG,WV-CP454E
	YWV0EA1170AN	Head Optical Assy for WV-CP650//BG,WV-CP654E
M11	YWV5EA2256A2	Upper Cover
M12	YWV9AA2418A3	Side Switch Assy
M13	YWV5WA2319A3	Side Panel for WV-CP450/BG
	YWV5WB2319A3	Side Panel for WV-CP454E
	YWV5WC2319A3	Side Panel for WV-CP650/BG
	YWV5WD2319A3	Side Panel for WV-CP654E
M14	YWV7SA3618A4	Dip Switch Label
M15	YWV2TF0333A3	Mounting Bracket
M16	YWV1KA0128A4	Washer
M17	YWV2FA1119A4	Cushion
M18	YWV2KB1163A2	Bottom Chassi
M19	YWV5WC2316A4	Rear Panel for WV-CP450/BG
	YWV5WA2326A4	Rear Panel for WV-CP454E
	YWV5WC2320A4	Rear Panel for WV-CP650/BG
	YWV5WA2327A4	Rear Panel for WV-CP654E
M20	YWV5BA1018A3	Rear Escutcheon
M21	YWV7QA4699A4	Main Label for WV-CP450/B
	YWV7QA4700A4	Main Label for WV-CP450/G
	YWV7QA4704A4	Main Label for WV-CP454E
	YWV7QA4708A4	Main Label for WV-CP650/B
	YWV7QA4709A4	Main Label for WV-CP650/G
	YWV7QA4712A4	Main Label for WV-CP654E
M22	YWV5DA1111A4	Ornament
M23	YWV7SA3616A4	Side Label
M24	YWV2FA1120A4	Cushion for WV-CP454E
M27	YFV2NA0084A4	Spacer
M28	YWV2PA0615A4	Insulator Sheet

MAIN BOARD for WV-CP450/BG,WV-CP454E

REF.NO.	PART NO.	DESCRIPTION
PCB1 (RTL)	YWVCP45EKC1A	Printed Circuit Board Assy
IC1	TMP93PS40DF	IC
IC2	MN13821	IC
IC3	YWBR9040FT1	IC
IC4	MN67353	IC
IC7	MN673521	IC
IC9	YWD6462GS905	IC
IC11,12	YWTC7S04F	IC
IC13	AN9DE01F	IC
IC15	YWTDA8766GCS	IC
IC17	YWTC7S32F	IC
IC19	YWTC7S32F	IC
IC20	YWTC7S04FUL	IC
IC21,22	YWTC7S08FUL	IC
IC23	YWTC7S04FUL	IC
IC24	TC7SH00FUL	IC
IC25	YWTC7W74F	IC
IC26	XC62AP4702MR	IC
Q1-4	2SK106945	FET
Q13	2SD1820-QRS	Transistor
Q14	2SB1219-QRS	Transistor
Q15	2SD874A-RS	Transistor
Q17	2SC4617	Transistor
Q18	2SA1774	Transistor
D3	YWHVU350TRF	Diode
D5,6	YWHVU359TRF	Diode
D8	HVU350TRF	Diode
D9	YWDA121	Diode
D17	YWDA227TL	Diode
D18	MA8150MTX	Diode
D19	MA8100HTX	Diode
D20-22	MA726	Diode
D23	MA8039HTX	Diode
TH193	L311F202J402	Thermistor
R1-3	ERJ3GEYJ101	Carbon 100 ohms 1/16W
R5	ERJ3GEYJ105	Carbon 1M ohms 1/16W
R8	ERJ3GEYJ103	Carbon 10K ohms 1/16W
R9	ERJ3GEY0R00	Carbon 0 ohms 1/16W
R10	ERJ3GEYJ102	Carbon 1K ohms 1/16W
R13	ERJ3GEYJ103	Carbon 10K ohms 1/16W
R14	ERJ3GEY0R00	Carbon 0 ohms 1/16W
R15	ERJ3GEYJ103	Carbon 10K ohms 1/16W
R17	ERJ3GEYJ103	Carbon 10K ohms 1/16W
R19	ERJ3GEYJ621	Carbon 620 ohms 1/16W
R22	ERJ3GEYJ304	Carbon 300K ohms 1/16W

REF.NO.	PART NO.	DESCRIPTION		REF.NO.	PART NO.	DESCRIPTION	
R23	ERJ3GEYJ201	Carbon	200 ohms 1/16W	R123	ERJ3GEYJ512	Carbon	5.1K ohms 1/16W
R25	ERJ3GEY0R00	Carbon	0 ohms 1/16W	R125	ERJ3GEYJ391	Carbon	390 ohms 1/16W
R26	ERJ3GEY0R00	Carbon	0 ohms 1/16W	R126,127	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R29	ERJ3GEYJ105	Carbon	1M ohms 1/16W	R132	ERJ3GEYJ332	Carbon	3.3K ohms 1/16W
R32	ERJ3GEYJ104	Carbon	100K ohms 1/16W	R133	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R33	ERJ3GEYJ103	Carbon	10K ohms 1/16W	R136	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R34	ERJ3GEYJ332	Carbon	3.3K ohms 1/16W	R139	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R35	ERJ3GEY0R00	Carbon	0 ohms 1/16W	R148	ERJ14YJ620	Carbon	62 ohms 1/4W
R36	ERJ3GEYJ104	Carbon	100K ohms 1/16W	R149	ERJ3GEYJ162	Carbon	1.6K ohms 1/16W
R37	ERJ3GEYJ202	Carbon	2K ohms 1/16W	R150	ERJ3GEYJ201	Carbon	200 ohms 1/16W
R38	ERJ3GEYJ104	Carbon	100K ohms 1/16W	R151	ERJ3GEYJ391	Carbon	390 ohms 1/16W
R39	ERJ3GEYJ105	Carbon	1M ohms 1/16W	R153	ERJ3GEYJ622	Carbon	6.2K ohms 1/16W
R42	ERJ3GEYJ621	Carbon	620 ohms 1/16W	R154,155	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R43	ERJ3GEYJ103	Carbon	10K ohms 1/16W	R156	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R44	ERJ3GEYJ103	Carbon	10K ohms 1/16W	R157	ERJ3GEYJ105	Carbon	1M ohms 1/16W
R47	ERJ3GEYJ242	Carbon	2.4K ohms 1/16W	R158	ERJ6GEYJ161V	Carbon	160 ohms 1/16W
R50	ERJ3GEYJ103	Carbon	10K ohms 1/16W	R159	ERJ6GEYJ201	Carbon	200 ohms 1/10W
R53	ERJ3GEY0R00	Carbon	0 ohms 1/16W	R161	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R54	ERJ3GEYJ104	Carbon	100K ohms 1/4W	R162	ERJ6GEYJ120	Carbon	12 ohms 1/10W
R55	ERJ3GEYJ102	Carbon	1K ohms 1/16W	R163	ERJ3RHD203V	Metal	20K ohms 1/16W
R56	ERJ3GEY0R00	Carbon	0 ohms 1/16W	R166,167	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R57	ERJ3GEYJ101	Carbon	100 ohms 1/16W	R170	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R58	ERJ3GEYJ302	Carbon	3K ohms 1/16W	R172	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R60	ERJ3GEYJ102	Carbon	1K ohms 1/16W	R173	ERJ3GEYJ131	Carbon	130 ohms 1/16W
R63	ERJ3GEYJ102	Carbon	1K ohms 1/16W	R178	ERJ3GEYJ912	Carbon	9.1K ohms 1/16W
R64	ERJ3GEYJ103	Carbon	10K ohms 1/16W	R183,184	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R65	ERJ3GEYJ102	Carbon	1K ohms 1/16W	R185	ERJ3GEYJ302	Carbon	3K ohms 1/16W
R66	ERJ3GEYJ514	Carbon	510K ohms 1/16W	R186	ERJ3GEYJ271	Carbon	270 ohms 1/16W
R67	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W	R188	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R68	ERJ3GEYJ474	Carbon	470K ohms 1/16W	R189	ERJ3GEYJ561	Carbon	560 ohms 1/16W
R69	ERJ3GEYJ134	Carbon	130K ohms 1/16W	R190	ERJ3GEYJ223	Carbon	22K ohms 1/16W
R70	ERJ3GEYJ152	Carbon	1.5K ohms 1/16W	R191	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R71	ERJ3GEYJ752	Carbon	7.5K ohms 1/16W	R192	ERJ3GEYJ164	Carbon	160K ohms 1/16W
R72	ERJ3GEYJ102	Carbon	1K ohms 1/16W	R194	ERJ14YJ101	Carbon	100 ohms 1/4W
R76	ERJ3GEYJ473	Carbon	47K ohms 1/16W	R300	ERJ8GCS0R00	Carbon	0 ohms 1/10W
R79	ERJ3GEYJ102	Carbon	1K ohms 1/16W	R400	ERDS2TJ474	Carbon	470K ohms 1/4W
R80	ERJ3GEYJ122	Carbon	1.2K ohms 1/16W	C1	YW5F104Z2VB	Ceramic	0.1 μF
R84	ERJ3GEY0R00	Carbon	0 ohms 1/16W	C3	YW5F104Z2VB	Ceramic	0.1 μF
R87	ERJ3RHD103V	Metal	10K ohms 1/16W	C8,9	YW5F104Z2VB	Ceramic	0.1 μF
R88	ERJ3RHD202V	Metal	2K ohms 1/16W	C13-17	YW5F104Z2VB	Ceramic	0.1 μF
R93	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W	C19	YW5CH270J5VB	Ceramic	27 pF
R94	ERJ3GEYJ751	Carbon	750 ohms 1/16W	C21	YW5CH270J5VB	Ceramic	27 pF
R100	ERJ3GEYJ303	Carbon	30K ohms 1/16W	C24	YW5F104Z2VB	Ceramic	0.1 μF
R102	ERJ3GEYJ103	Carbon	10K ohms 1/16W	C26	YW5CH241J5VB	Ceramic	240 pF
R103	ERJ3GEYJ153	Carbon	15K ohms 1/16W	C28	YW5X103K5VB	Ceramic	0.01 μF
R104	ERJ3GEYJ154	Carbon	150K ohms 1/16W	C30	YW5UJ150J5VB	Ceramic	15 pF 50V
R105	ERJ3GEYJ362	Carbon	3.6K ohms 1/16W	C32	YW5CH241J5VB	Ceramic	240 pF
R106	ERJ3GEYJ513	Carbon	51K ohms 1/16W	C33	YW5UJ150J5VB	Ceramic	15 pF 50V
R108	ERJ3RHD821V	Metal	820 ohms 1/16W	C34	YW5F104Z2VB	Ceramic	0.1 μF
R109	YWR0816P102D	Metal	1K ohms 1/16W	C36	YW5F104Z2VB	Ceramic	0.1 μF
R111	ERJ3GEYJ104	Carbon	100K ohms 1/16W	C37	YW5F104Z2VB	Ceramic	0.1 μF
R113	ERJ3GEY0R00	Carbon	0 ohms 1/16W	C38	YW5X103K5VB	Ceramic	0.01 μF
R117,118	ERJ3GEY0R00	Carbon	0 ohms 1/16W	C39	YW5F104Z2VB	Ceramic	0.1 μF
R119	ERJ3GEYJ103	Carbon	10K ohms 1/16W	C40	YW5X103K5VB	Ceramic	0.01 μF
R122	ERJ3GEYJ563	Carbon	56K ohms 1/16W	C41	YW5F104Z2VB	Ceramic	0.1 μF

REF.NO.	PART NO.	DESCRIPTION	
C42	YW5F104Z2VB	Ceramic	0.1 µF
C43	YW5X103K5VB	Ceramic	0.01 µF
C44	YW5X104K1VB	Ceramic	0.1 µF
C46	YW5F104Z2VB	Ceramic	0.1 µF
C47	YW5X104K1VB	Ceramic	0.1 µF
C50	YW5F473Z5VB	Ceramic	0.047 µF
C51	YW5X222K5VB	Ceramic	2200 pF
C52	YW5CH471J5VB	Ceramic	470 pF
C53	YW400105FZ	Ceramic	1 µF
C56	ECST0JY335	Tantalum	3.3 µF 6.3V
C59	ECST1AC476ZR	Tantalum	47 µF 10V
C60	YW32Y106F16T	Ceramic	10 µF
C61	YW426105FZT	Ceramic	1 µF
C62	ECST0JY335	Tantalum	3.3 µF 6.3V
C63	YW426105XK	Ceramic	1 µF
C64	YW426225FZT	Ceramic	2.2 µF
C65	TAJA105M016	Tantalum	1 µF 16V
C70	YW5F104Z2VB	Ceramic	0.1 µF
C72	YW5F104Z2VB	Ceramic	0.1 µF
C74,75	YW5F104Z2VB	Ceramic	0.1 µF
C77-79	YW5F104Z2VB	Ceramic	0.1 µF
C81	YW5X104K1VB	Ceramic	0.1 µF
C82	YW5X103K5VB	Ceramic	0.01 µF
C83	YW5F104Z2VB	Ceramic	0.1 µF
C84	YW5CH101J5VB	Ceramic	100 pF
C85	YW5F104Z2VB	Ceramic	0.1 µF
C86	YW32Y106F16T	Ceramic	10 µF
C88	YW32Y475F25T	Ceramic	4.7 µF
C89	YW426105XK	Ceramic	1 µF
C90	ECST1EY105ZR	Tantalum	1 µF 25V
C92	YW426105FZT	Ceramic	1 µF
C94,95	YW400105FZ	Ceramic	1 µF
C97	ECST1EX475ZR	Tantalum	4.7 µF 25V
C108,109	YW32Y106F16T	Ceramic	10 µF
C110	EEVHB0J220R	Electrolytic	22 µF 6.3V
C111	EEVHB0J101P	Electrolytic	100 µF 6.3V
C112	YW5F104Z2VB	Ceramic	0.1 µF
C114	ECST1AY106ZR	Tantalum	10 µF 10V
C115	YW5X104K1VB	Ceramic	0.1 µF
C116	YW5CH101J5VB	Ceramic	100 pF
C117	YW5CH102J5VB	Ceramic	1000 pF
C118	YW5F683Z2VB	Ceramic	0.068 µF
C119	YW5F104Z2VB	Ceramic	0.1 µF
C120	YW5F224Z1VB	Ceramic	0.22 µF
C121	YW400475FZT	Ceramic	4.7 µF
C123	YW400105FZ	Ceramic	1 µF
C124	YW400105XKT	Ceramic	1 µF
C125	YW5CH510J5VB	Ceramic	51 pF
C126	YW5CH200J5VB	Ceramic	20 pF
C128,129	YW5CH102J5VB	Ceramic	1000 pF
C130,131	YW5F104Z2VB	Ceramic	0.1 µF
L1	EIC4EJ011E	Coil	
L4,10	ELJFC8R2MF	Coil	8.2 µH
L11,12	ELJFC8R2MF	Coil	8.2 µH
L14	ELJFC6R8JF	Coil	6.8 µH

REF.NO.	PART NO.	DESCRIPTION	
L15	ELJFC2R2JF	Coil	2.2 µH
X1	PBRC12R288BR	Crystal Oscillator	
X2	YW32C228R375	Crystal Oscillator	
X3	YW32C217R734	Crystal Oscillator	
CF1	YWNL4532S4R4	Filter	
CN1	YW41793970	40-pin Connector	
CN2	YWTKCF20PG2	20-pin Connector	
CN4	YWTKCF08PG2	8-pin Connector	

MAIN BOARD for WV-CP650/BG,WV-CP654E

REF.NO.	PART NO.	DESCRIPTION	
PCB1 (RTL)	YWVCP65EKC1A	Printed Circuit Board Assy	
IC1	TMP93PS40DF	IC	
IC2	MN13821	IC	
IC3	YWBR9040FT1	IC	
IC4	MN67353	IC	
IC6	YWUPD97047GC	IC	
IC7	MN673521	IC	
IC8	YWZA4035H	IC	
IC9	YWD6462GS905	IC	
IC11,12	YWTC7S04F	IC	
IC13	AN9DE01F	IC	
IC15	YWTDA8766GCS	IC	
IC17-19	YWTC7S32F	IC	
IC20	YWTC7S04FUL	IC	
IC21,21	YWTC7S08FUL	IC	
IC23	YWTC7S04FUL	IC	
IC24	TC7SH00FUL	IC	
IC25	YWTC7W74F	IC	
IC26	XC62AP4702MR	IC	
Q1-4	2SK106945	FET	
Q13	2SD1820-QRS	Transistor	
Q14	2SB1219-QRS	Transistor	
Q15	2SD874A-RS	Transistor	
Q17	2SC4617	Transistor	
Q18	2SA1774	Transistor	
D3	YWHVU350TRF	Diode	
D5,6	YWHVU359TRF	Diode	
D8	YWHVU350TRF	Diode	
D9	YWDA121	Diode	
D17	YWDA227TL	Diode	
D18	MA8150MTX	Diode	
D19	MA8100HTX	Diode	
D20-22	MA726	Diode	
D23	MA8039HTX	Diode	
TH193	L311F202J402	Thermistor	
R1-3	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R5	ERJ3GEYJ105	Carbon	1M ohms 1/16W
R8	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R9	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R10	ERJ3GEYJ102	Carbon	1K ohms 1/16W

REF.NO.	PART NO.	DESCRIPTION		REF.NO.	PART NO.	DESCRIPTION	
R12	ERJ3GEY0R00	Carbon	0 ohms 1/16W	R106	ERJ3GEYJ513	Carbon	51K ohms 1/16W
R13	ERJ3GEYJ103	Carbon	10K ohms 1/16W	R108	ERJ3RHD821V	Metal	820 ohms 1/16W
R14	ERJ3GEY0R00	Carbon	0 ohms 1/16W	R109	YWR0816P102D	Metal	1K ohms 1/16W
R15	ERJ3GEYJ103	Carbon	10K ohms 1/16W	R111	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R17	ERJ3GEYJ103	Carbon	10K ohms 1/16W	R113	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R18	ERJ3GEY0R00	Carbon	0 ohms 1/16W	R117	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R19	ERJ3GEYJ621	Carbon	620 ohms 1/16W	R118	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R21	ERJ3GEY0R00	Carbon	0 ohms 1/16W	R119	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R22	ERJ3GEYJ304	Carbon	300K ohms 1/16W	R122	ERJ3GEYJ563	Carbon	56K ohms 1/16W
R23	ERJ3GEYJ201	Carbon	200 ohms 1/16W	R123	ERJ3GEYJ512	Carbon	5.1K ohms 1/16W
R25	ERJ3GEY0R00	Carbon	0 ohms 1/16W	R125	ERJ3GEYJ391	Carbon	390 ohms 1/16W
R26	ERJ3GEY0R00	Carbon	0 ohms 1/16W	R126,127	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R29	ERJ3GEYJ105	Carbon	1M ohms 1/16W	R132	ERJ3GEYJ332	Carbon	3.3K ohms 1/16W
R32	ERJ3GEYJ104	Carbon	100K ohms 1/16W	R133	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R33	ERJ3GEYJ103	Carbon	10K ohms 1/16W	R136	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R34	ERJ3GEYJ332	Carbon	3.3K ohms 1/16W	R139	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R36	ERJ3GEYJ104	Carbon	100K ohms 1/16W	R148	ERJ14YJ620	Carbon	62 ohms 1/16W
R37	ERJ3GEYJ202	Carbon	2K ohms 1/16W	R149	ERJ3GEYJ162	Carbon	1.6K ohms 1/16W
R38	ERJ3GEYJ104	Carbon	100K ohms 1/16W	R150	ERJ3GEYJ201	Carbon	200 ohms 1/16W
R39	ERJ3GEYJ105	Carbon	1M ohms 1/16W	R151	ERJ3GEYJ391	Carbon	390 ohms 1/16W
R42	ERJ3GEYJ621	Carbon	620 ohms 1/16W	R153	ERJ3GEYJ622	Carbon	6.2K ohms 1/16W
R43	ERJ3GEYJ103	Carbon	10K ohms 1/16W	R154,155	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R44	ERJ3GEYJ103	Carbon	10K ohms 1/16W	R156	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R47	ERJ3GEYJ242	Carbon	2.4K ohms 1/16W	R157	ERJ3GEYJ105	Carbon	1M ohms 1/16W
R50	ERJ3GEYJ103	Carbon	10K ohms 1/16W	R158	ERJ6GEYJ161V	Carbon	160 ohms 1/16W
R53	ERJ3GEY0R00	Carbon	0 ohms 1/16W	R159	ERJ6GEYJ201	Carbon	200 ohms 1/10W
R54	ERJ3GEYJ104	Carbon	100K ohms 1/4W	R161	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R55	ERJ3GEYJ102	Carbon	1K ohms 1/16W	R162	ERJ6GEYJ120	Carbon	12 ohms 1/16W
R56	ERJ3GEY0R00	Carbon	0 ohms 1/16W	R163	ERJ3RHD203V	Metal	20K ohms 1/16W
R57	ERJ3GEYJ101	Carbon	100 ohms 1/16W	R166,167	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R58	ERJ3GEYJ302	Carbon	3.2K ohms 1/16W	R170,171	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R60	ERJ3GEYJ102	Carbon	1K ohms 1/16W	R172	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R63	ERJ3GEYJ102	Carbon	1K ohms 1/16W	R173	ERJ3GEYJ131	Carbon	130 ohms 1/16W
R64	ERJ3GEYJ103	Carbon	10K ohms 1/16W	R178	ERJ3GEYJ912	Carbon	9.1K ohms 1/16W
R65	ERJ3GEYJ102	Carbon	1K ohms 1/16W	R185	ERJ3GEYJ302	Carbon	3K ohms 1/16W
R66	ERJ3GEYJ514	Carbon	510K ohms 1/16W	R186	ERJ3GEYJ271	Carbon	270 ohms 1/16W
R67	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W	R188	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R68	ERJ3GEYJ474	Carbon	470K ohms 1/16W	R189	ERJ3GEYJ561	Carbon	560 ohms 1/16W
R69	ERJ3GEYJ134	Carbon	130K ohms 1/16W	R190	ERJ3GEYJ223	Carbon	22K ohms 1/16W
R70	ERJ3GEYJ152	Carbon	1.5K ohms 1/16W	R191	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R71	ERJ3GEYJ472	Carbon	4.7K ohms 1/16W	R192	ERJ3GEYJ164	Carbon	160K ohms 1/16W
R72	ERJ3GEYJ752	Carbon	7.5K ohms 1/16W	R194	ERJ14YJ101	Carbon	100 ohms 1/16W
R76	ERJ3GEYJ473	Carbon	47K ohms 1/16W	R300	ERJ8GCS0R00	Carbon	0 ohms 1/16W
R79	ERJ3GEYJ102	Carbon	1K ohms 1/16W	R400	ERDS2TJ474	Carbon	470K ohms 1/4W
R80	ERJ3GEYJ122	Carbon	1.2K ohms 1/16W	Z1-4	EXBV8V751JV	Block Resistor	
R84	ERJ3GEY0R00	Carbon	0 ohms 1/16W	C1-3	YW5F104Z2VB	Ceramic	0.1 µF
R87	ERJ3RHD103V	Metal	10K ohms 1/16W	C7-11	YW5F104Z2VB	Ceramic	0.1 µF
R88	ERJ3RHD202V	Metal	2K ohms 1/16W	C13-17	YW5F104Z2VB	Ceramic	0.1 µF
R93	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W	C19	YW5CH270J5VB	Ceramic	240 pF
R94	ERJ3GEYJ751	Carbon	750 ohms 1/16W	C21	YW5CH270J5VB	Ceramic	240 pF
R100	ERJ3GEYJ303	Carbon	30K ohms 1/16W	C24	YW5F104Z2VB	Ceramic	0.1 µF
R102	ERJ3GEYJ103	Carbon	10K ohms 1/16W	C26	YW5CH241J5VB	Ceramic	240 pF
R103	ERJ3GEYJ153	Carbon	15K ohms 1/16W	C28	YW5X103K5VB	Ceramic	0.01 µF
R104	ERJ3GEYJ154	Carbon	150K ohms 1/16W	C30	YW5UJ150J5VB	Ceramic	15 pF 50V
R105	ERJ3GEYJ362	Carbon	3.6K ohms 1/16W	C32	YW5CH241J5VB	Ceramic	240 pF

REF.NO.	PART NO.	DESCRIPTION	
C33	YW5UJ150J5VB	Ceramic	15 pF 50V
C34,36	YW5F104Z2VB	Ceramic	0.1 µF
C37	YW5F104Z2VB	Ceramic	0.1 µF
C38	YW5X103K5VB	Ceramic	0.01 µF
C39	YW5F104Z2VB	Ceramic	0.1 µF
C40	YW5X103K5VB	Ceramic	0.01 µF
C41,42	YW5F104Z2VB	Ceramic	0.1 µF
C43	YW5X103K5VB	Ceramic	0.01 µF
C44	YW5X104K1VB	Ceramic	0.1 µF
C46	YW5F104Z2VB	Ceramic	0.1 µF
C47	YW5X104K1VB	Ceramic	0.1 µF
C50	YW5F473Z5VB	Ceramic	0.047 µF
C51	YW5X222K5VB	Ceramic	2200 pF
C52	YW5CH471J5VB	Ceramic	470 pF
C53	YW400105FZ	Ceramic	1 µF
C56	ECST0JY335	Tantalum	3.3 µF 6.3V
C57	YW32Y106F16T	Ceramic	10 µF
C59	ECST1AC476ZR	Tantalum	47 µF 10V
C60	YW32Y106F16T	Ceramic	10 µF
C61	YW426105FZT	Ceramic	1 µF
C62	ECST0JY335	Tantalum	3.3 µF 6.3V
C63	YW426105XK	Ceramic	1 µF
C64	YW426225FZT	Ceramic	2.2 µF
C65	TAJA105M016R	Tantalum	1 µF 16V
C70,72	YW5F104Z2VB	Ceramic	0.1 µF
C74,75	YW5F104Z2VB	Ceramic	0.1 µF
C77-79	YW5F104Z2VB	Ceramic	0.1 µF
C81	YW5X104K1VB	Ceramic	0.1 µF
C82	YW5X103K5VB	Ceramic	0.01 µF
C83	YW5F104Z2VB	Ceramic	0.1 µF
C84	YW5CH101J5VB	Ceramic	100 pF
C85	YW5F104Z2VB	Ceramic	0.1 µF
C86	YW32Y106F16T	Ceramic	10 µF
C88	YW32Y475F25T	Ceramic	4.7 µF
C89	YW426105XK	Ceramic	1 µF
C90	ECST1EY105ZR	Tantalum	1 µF 25V
C92	YW426105FZT	Ceramic	1 µF
C94,95	YW400105FZ	Ceramic	1 µF
C97	ECST1EX475ZR	Tantalum	4.7 µF 25V
C108,109	YW32Y106F16T	Ceramic	10 µF
C110	EEVHB0J220R	Electrolytic	22 µF 6.3V
C111	EEVHB0J101P	Electrolytic	100 µF 6.3V
C112	YW5F104Z2VB	Ceramic	0.1 µF
C114	ECST1AY106ZR	Tantalum	10 µF 10V
C115	YW5X104K1VB	Ceramic	0.1 µF
C116	YW5CH101J5VB	Ceramic	100 pF
C117	YW5CH102J5VB	Ceramic	1000 pF
C118	YW5F683Z2VB	Ceramic	0.068 µF
C119	YW5F104Z2VB	Ceramic	0.1 µF
C120	YW5F224Z1VB	Ceramic	0.22 µF
C121	YW400475FZT	Ceramic	4.7 µF
C123	YW400105FZ	Ceramic	1 µF
C124	YW400105XKT	Ceramic	1 µF
C125	YW5CH510J5VB	Ceramic	51 pF
C126	YW5CH200J5VB	Ceramic	20 pF

REF.NO.	PART NO.	DESCRIPTION	
C128,129	YW5CH102J5VB	Ceramic	1000 pF
C130,131	YW5F104Z2VB	Ceramic	0.1 µF
L1	EIC4EJ011E	Coil	
L2,4	ELJFC8R2MF	Coil	8.2 µH
L10-12	ELJFC8R2MF	Coil	8.2 µH
L14	ELJFC6R8JF	Coil	6.8 µH
L15	ELJFC2R2JF	Coil	2.2 µH
X1	PBRC12R288BR	Crystal Oscillator	
X2	YW32C228R375	Crystal Oscillator	
X3	YW32C217R734	Crystal Oscillator	
CF1	YWNL4532S4R4	Filter	
CN1	YW41793970	40-pin Connector	
CN2	YWTKCF20PG2	20-pin Connector	
CN4	YWTKCF08PG2	8-pin Connector	

I / F BOARD for WV-CP450/BG,WV-CP454E

PCB2 (RTL)	YWVCP45JKY3A	Printed Circuit Board Assy	
D4	YWSLC22VR	LED	
Q11	2SC4617	Transistor	
Q12	2SD1819-QRS	Transistor	
Q13,14	2SB1218A-QR	Transistor	
Q15	2SA1774	Transistor	
Q16	2SC4617	Transistor	
R1	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R48	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R49,50	ERJ3GEYJ432	Carbon	4.3K ohms 1/16W
R51	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R52,53	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R55-57	ERJ3GEYJ204	Carbon	200K ohms 1/16W
R58	ERJ3GEYJ561	Carbon	560 ohms 1/16W
R59	ERJ3GEYJ332	Carbon	3.3K ohms 1/16W
R60,61	ERJ3GEYJ204	Carbon	200K ohms 1/16W
R62	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R63	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R64	ERJ3GEYJ512	Carbon	5.1K ohms 1/16W
R68	ERJ3GEYJ750	Carbon	75 ohms 1/16W
R69	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R251	ERJ14YJ100	Carbon	10 ohms 1/4W
C1	YW5F104Z2VB	Ceramic	0.1 µF
C33,34	YW400105FZ	Ceramic	1 µF
L1	ELJFCR68MF	Coil	0.68 µH
L2-4	ELJFC8R2MF	Coil	8.2 µH
SW1-5	YWSKQDPB	Push Switch	
SW6	YWD1S02GE	Dip Switch	
CN1	YWTKCF20PM2	Connector	
CN4	YWM1963	Connector	
CN5,6	YWP2367	Connector	
M25	YWV2KA1171A4	Mounting Chassis for Connector	
M26	YWV2SA4446A4	Mounting Angle	

I / F BOARD for WV-CP650/BG,WV-CP654E

REF.NO.	PART NO.	DESCRIPTION	
PCB2 (RTL)	YWVCP65JKY3A	Printed Circuit Board Assy	
Q11	2SC4617	Transistor	
Q12	2SD1819-QRS	Transistor	
Q13,14	2SB1218A-QR	Transistor	
Q15	2SA1774	Transistor	
Q16	2SC4617	Transistor	
D4	YWSLC22VR	LED	
R1	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R48	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R49,50	ERJ3GEYJ432	Carbon	4.3K ohms 1/16W
R51	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R52,53	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R55-57	ERJ3GEYJ204	Carbon	200K ohms 1/16W
R58	ERJ3GEYJ561	Carbon	560 ohms 1/16W
R59	ERJ3GEYJ332	Carbon	3.3K ohms 1/16W
R60,61	ERJ3GEYJ204	Carbon	200K ohms 1/16W
R62	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R63	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R64	ERJ3GEYJ512	Carbon	5.1K ohms 1/16W
R68	ERJ3GEYJ750	Carbon	75 ohms 1/16W
R69	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R251	ERJ14YJ100	Carbon	10 ohms 1/4W
C1	YW5F104Z2VB	Ceramic	0.1 µF
C33,34	YW400105FZ	Ceramic	1 µF
L1	ELJFCR68MF	Coil	0.68 µH
L2-4	ELJFC8R2MF	Coil	8.2 µH
SW1-5	YWSKQDPB	Push Switch	
SW6	YWD1S02GE	Dip Switch	
CN1	YWTKCF20PM2	Connector	
CN2	S2BZRSM3ATF	2-pin Connector	
CN4	YWM1963	Connector	
CN5,6	YWP2367	Connector	
M25	YWV2KA1171A4	Mounting Chassis for Connector	
M26	YWV2SA4446A4	Mounting Angle	

POWER BOARD for WV-CP450/BG,CP650/BG

REF.NO.	PART NO.	DESCRIPTION	
PCB3 (RTL)	YWVC450EKY4A	Printed Circuit Board Assy	
IC1	MIP160	IC	
IC2	YWTA76431S	IC	
Q1	YWPC123FY2	IC	
Q2	2SC2412KT96	Transistor	
Q3	YWPC123FY2	Photo Coupler	
D1 ⚠	YWDF06S	Diode	
D2	YWP6KE180A	Diode	
D3	YWERA34-10	Diode	
D4,11	YWSC2012	Diode	
D12	YWSC2012	Diode	
D14	YWSC80206L	Diode	
VS1 ⚠	YWJ07N471KP	ZNR	
R1,2	ERJ14YJ913	Carbon	91K ohms 1/4W
R3	ERJ6GEYJ363	Carbon	36K ohms 1/10W
R4	ERJ6GEYJ472	Carbon	4.7K ohms 1/16W
R5	ERJ6GEYJ392	Carbon	3.9K ohms 1/16W
R6,7	ERJ6GEYJ470	Carbon	47 ohms 1/10W
R8	ERJ6GEYJ100	Carbon	10 ohms 1/10W
R9,10	ERJ6GEYJ470	Carbon	47 ohms 1/10W
R11,12	ERJ6GEYJ103	Carbon	10K ohms 1/10W
R13	ERJ6GEYJ470	Carbon	47 ohms 1/10W
R14	ERJ6GEYJ471	Carbon	470 ohms 1/10W
R15	ERJ6GEYJ102	Carbon	1K ohms 1/10W
R16	ERA6YED682V	Metal	6.8K ohms 1/16W
R17	ERJ6GEYJ391	Carbon	390 ohms 1/10W
R18	ERA6YED682V	Metal	6.8K ohms 1/16W
R19	ERJ6GEYJ103	Carbon	10K ohms 1/10W
R20	ERJ6GEYJ330	Carbon	33 ohms 1/10W
C1 ⚠	YWX75M683VS1	Plastic	0.068 µF
C2	RJ3400V100M	Electrolytic	10 µF
C4,5	YF400104FZT	Ceramic	0.1 µF
C6	YWRJJ1E390E3	Electrolytic	39 µF 25V
C7	YW400105FZ	Ceramic	1 µF
C8,9	ECKDRS332	Ceramic	3300 pF
C11	YWRJJ1C820E4	Electrolytic	82 µF 16V
C12	YWRJJ1C121F3	Electrolytic	120 µF 16V
C13	YWRJJ1A561H4	Electrolytic	560 µF 10V
C14	YWRJJ1A121E4	Electrolytic	102 µF 10V
C16	YF400104FZT	Ceramic	0.1 µF
C17-19 ⚠	YW12FY222ML7	Ceramic	2200 pF
C20	ECKDRS332	Ceramic	3300 pF
C21	YWBM6681KH	Ceramic	680 pF
L1	YWLCCP450E	Coil	
L2	YWSL675100	Coil	
T1 ⚠	YWPTCP450E	Power Transformer	
CN1	YWSC8R	Connector	
CN2	YWTKCF08PE3	Connector	
F1 ⚠	XBA2C05ET0A	Current Fuse	0.5A 250V
E1,2	S-N5057	Fuse Holder	
E3	YW840522	Insulator	
E4	YW851040	Insulator	
M31	YWV5KA2151A3	Case	
M32	YWV6EA1032A3	Lid	
M33	YWV2KA1172A4	Mounting Chassis for Connector	
M34	YFV7MA0412A4	Fuse Change Label	
M35	YWV7MA0451A4	Fuse Rated Label	
M36	YWV2PA1122A4	Insulator Paper for Power Transformer	
M37	YWV7DA1069A4	Hiet Sink for IPD	

POWER BOARD for WV-CP454E/CP654E

REF.NO.	PART NO.	DESCRIPTION
PCB3 (RTL)	YWVC454EKY4A	Printed Circuit Board Assy
IC1	UC2843NU	IC
IC2	YWTA76431S	IC
Q1	2SC2412KT96	Transistor
Q2	2SK252001MR	FET
Q3	2SA1037-QRS	Transistor
Q4,5	YWPC817X7	Photo Coupler
VS1-3	ERZV07D680	ZNR
D1	YWD10SC6M	Diode
D3	YWD10SC6MR	Diode
D5	YWUDZ11B	Diode
D6	YWSC2012	Diode
D7	DAP202KT7	Diode
D11,12	YWSC2012	Diode
D14	YWSC80206L	Diode
R1,2	ERJ14YJ112	Carbon 1.1K ohms 1/10W
R3	ERJ6GEYJ152	Carbon 1.5K ohms 1/10W
R4	ERJ6GEYJ103	Carbon 10K ohms 1/10W
R5	ERJ6GEYJ220	Carbon 22 ohms 1/10W
R6	ERJ6GEYJ104	Carbon 100K ohms 1/10W
R7	YWR1220P102D	Metal 1K ohms
R8	ERJ6GEYJ103	Carbon 10K ohms 1/10W
R9	ERJ6GEYJ122	Carbon 1.2K ohms 1/10W
R11	ERJ14RQJR22U	Carbon 0.22 ohms 1/4W
R12	ERJ14YJ101	Carbon 100 ohms 1/10W
R13	ERJ6GEYJ470	Carbon 47 ohms 1/10W
R14	ERJ6GEYJ471	Carbon 470 ohms 1/10W
R21,22	ERJ6GEYJ103	Carbon 10K ohms 1/10W
R23	ERJ6GEYJ470	Carbon 47 ohms 1/10W
R24	ERJ6GEYJ471	Carbon 470 ohms 1/10W
R25	ERJ6GEYJ152	Carbon 1.5K ohms 1/10W
R26	ERA6YED682V	Metal 6.8K ohms 1/10W
R27	ERJ6GEYJ391	Carbon 390 ohms 1/10W
R28	ERA6YED682V	Metal 6.8K ohms 1/10W
R29	ERJ6GEYJ103	Carbon 10K ohms 1/10W
C1	ECQV1334JM	Plastic 0.33 µF
C2	ECQV1104JM	Plastic 0.1 µF
C3,4	ECQM1103KZ	Ceramic 0.01 µF
C5	YWRJ350V471	Electrolytic 470 µF 350V
C6	YW400105FZ	Ceramic 1 µF
C7	YF400103XKT	Ceramic 0.01 µF
C8	YWRJJ1C560E3	Electrolytic 56 µF 16V
C9	YF400471CHJT	Ceramic 470 pF
C10	YF400103XKT	Ceramic 0.01 µF
C11	YWRJJ1C121F3	Electrolytic 120 µF 16V
C12	YF400224FZT	Ceramic 0.22 µF
C13	YWBM6681KH	Ceramic 680 pF
C14	ECQM1103KZ	Ceramic 0.01 µF
C15	YF400104FZT	Ceramic 0.1 µF
C21	YWRJJ1C820E4	Electrolytic 82 µF 16V
C23	YWRJJ1C121F3	Electrolytic 120 µF 16V
C24	YWRJJ1A561H4	Electrolytic 560 µF 10V
C25	YWRJJ1A121E4	Electrolytic 120 µF 10V
C26,27	YF400103XKT	Ceramic 0.01 µF
L1	YWLCCP454P	Coil
L2	YWSL675100	Coil
T1 ⚠	YWPTCP454P	Power Transformer
CN1	YWT6944	Connector
CN2	YWTKCF08PE3	Connector
F1 ⚠	XBA2C31ET0A	Current Fuse 3.1A 125V
E1,2	S-N5057	Fuse Holder
E3	YW840522	Insulator
M31	YWV2PA1121A4	Insulator Cover
M32	YWV7DA1068B4	Heat Sink
M33	YWV2KA1173A4	Mounting Angle for Terminal Board
M34	YFV7MA0412A4	Fuse Change Label
M35	YWV7MA0455A4	Fuse Rated Label
M36	YW0920	Tact

ALARM BOARD for WV-CP650/BG,CP654E

PCB4 (RTL)	YWVCP65JKY5A	Printed Circuit Board Assy
CN1	YWML400A102P	Connector
E1	YWCP650J1	Wire Assy for I/F Board CN2

ACCESSORY PARTS/PACKAGING PARTS

E10 ⚠	YWACP45B	AC Power Cord Assy for WV-CP450/B,CP650/B
⚠	YWACP45G	AC Power Cord Assy for WV-CP450/G,CP650/G
P10	YWBNC117PNI	Plug for WV-CP454E,CP654E
CN10	YWM1943A	ALC Lens Connector
M41	YWV8QA4715AN	Operating Instructions for WV-CP450/BG,CP454E
	YWV8QA4719AN	Operating Instructionsfor WV-CP650/BG,CP654E
M43	YWT050803	Polyethylene Bag
M44	YWT20X35C03	Polyethylene Bag
M45	YWV7SA3645A4	Caution Label
M49	YWV7SA2037A3	Bar Cord Label
M50	YWV9CA3573AN	Packaging Assy for WV-CP450/B
	YWV9CA3574AN	Packaging Assy for WV-CP450/G
	YWV9CA3578AN	Packaging Assy for WV-CP454E
	YWV9CA3582AN	Packaging Assy for WV-CP650/B
	YWV9CA3583AN	Packaging Assy for WV-CP650/G
	YWV9CA3586AN	Packaging Assy for WV-CP654E

W0573 #2028046

ORDER NO. AVS9901162P8

Parts Change Notice

Subject : Correction

Model No. WV-CP450/454E

Effective From : ALL

Please revise the original parts list in the Service Manual to conform to the change(s) shown herein.
If new part numbers are shown, be sure to use them when ordering parts.

Reason for Change + The circled item indicates the reason. If no marking, see the Notes in the bottom column.

1. Improve performance
2. Change of material or dimension
3. To meet approved specification
4. Standardization
5. Addition
6. Deletion
[✓ 7.] Correction
8. Other

Interchangeability Code ++ The circled item indicates the interchangeability. If no marking, see the Notes in the bottom column.

	Parts	Set Production	
A	Original New	Early Late	Original or new parts may be used in early or late production set. Use original parts until exhausted, then stock new parts.
B	Original New	Early Late	Original parts may be used in early production sets only. New parts may be used in early or late production sets. Use original parts where possible, then stock new parts.
[✓ C]	Original New	Early Late	New parts only may be used in early or late production sets. Stock new parts.
D	Original New	Early Late	Original parts may be used in early production sets only. New parts may be used in late production sets only. Stock both original and new parts.
E	Other		

Part Number Parts identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts. Parts identified by o mark are new parts used from this Parts Change Notice.

Ref No.	Original Part No.	New Part No.	Notes (+, ++)	Part Name & Descriptions	Price
		MISCELLANEOUS			
M10	YWV0EA1166AN	YWV0EA1233AN	7, C	Head Optical Assy	

File this Parts Change Notice with your copy of the Service Manual.

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V90573

ORDER NO. AVS9909196P8

Parts Change Notice

Subject : Correction

Model No. WV-CP450/650 Series

Effective From : ALL

Please revise the original parts list in the Service Manual to conform to the change(s) shown herein.
If new part numbers are shown, be sure to use them when ordering parts.

Reason for Change + The circled item indicates the reason. If no marking, see the Notes in the bottom column.

1. Improve performance
2. Change of material or dimension
3. To meet approved specification
4. Standardization
5. Addition
6. Deletion
[✓ 7.] Correction
8. Other

Interchangeability Code ++ The circled item indicates the interchangeability. If no marking, see the Notes in the bottom column.

	Parts	Set Production	
A	Original New	Early Late	Original or new parts may be used in early or late production set. Use original parts until exhausted, then stock new parts.
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E	Other		

Part Number Parts identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts. Parts identified by o mark are new parts used from this Parts Change Notice.

Ref No.	Original Part No.	New Part No.	Notes (+, ++)	Part Name & Descriptions	Price
		MAIN BOARD			
IC25	YWTC7W74F	C0JBAF000161	7,C	IC	

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